

November 30, 2005

Peter Van Alyea
Redwood Oil Company
455 Yolanda Avenue, Suite 200
Santa Rosa, CA 95404

Remediation System Operation Report
Third Quarter 2005
Redwood Oil Company Bulk Plant
455 Yolanda
Santa Rosa, CA

Dear Mr. Van Alyea:

ECM Group (ECM) has prepared this report summarizing the operation of the ground water remediation system at the above-referenced site (Figures 1 and 2, Appendix A). The system consists of a Ground Water Extraction (GWE) System and an Air Sparge (AS) System. A plan view of the system is shown on Figure 3 (Appendix A). A Soil Vapor Extraction (SVE) System was formerly operated at the facility. Operation of the SVE System was discontinued in September 2003.

System Operation

A summary report describing system installation was submitted in November 2001.¹ The GWE system was operational in June, 2001. The AS system was operational in July, 2001. The SVE system was initially activated on July 27, 2001. On August 22, 2001, the SVE system was deactivated in order to clean the furnace catalyst and bring the system to Bay Area Air Quality Management (BAAQMD) standards. Modifications were completed and the system was permanently reactivated on September 18, 2001.

A System Evaluation Report dated August 27, 2003 recommended deactivation of the SVE system.² The SVE system was deactivated September 5, 2003. Historical operating data for the SVE system is presented in Tables 1 and 2, Appendix B.

¹ ECM, 2001, Remedial System Installation, Redwood Oil Company Bulk Plant, 455 Yolanda, Santa Rosa, CA, November 12, 2001, 5 pages and 4 appendices.

² 2003, ECM, Remedial System Evaluation and Monitoring Reduction Proposal, 455 Yolanda Ave., Santa Rosa, CA August 27, 2003, 10 pages and 3 attachments.

The remediation system consists of nine wells (GWE/SVE-1 through GWE/SVE-9) which are constructed as combined GWE/SVE wells, seven GWE wells (PMCS-1 through PMCS-6, and GWE-10), three SVE wells (SVE-11 through SVE-13), and 14 air injection (sparge) points. Schematics of GWE wells are shown in Figures 4 and 5 (Appendix A). Schematics of SVE wells are shown in Figures 6 and 7 (Appendix A). Schematics for combined GWE/SVE well-heads are shown in Figure 8 (Appendix A). Schematics of an AS injection point is shown in Figure 9 (Appendix A). Typical conduit trench details are shown in Figure 10 (Appendix A). Layout of the water, air and electrical systems in the treatment system pad are shown in Figures 11 through 13 (Appendix A).

Analytic laboratory reports for system effluent water samples collected during the third quarter of 2005 are included in Appendix C. Operation and maintenance field notes are presented in Appendix D.

GWE System Operation

The GWE system extracts ground water from a total of 16 wells (Figure 3, Appendix A). Table 3 (Appendix B) provides flow totalizer readings for the GWE system. Between system start-up and October 5, 2005, a total of 4,545,919 gallons of ground water were extracted by the system. Flow rate for the system over the third quarter of 2005 varied from 0.0 to 3.88 gallons per minute (GPM). Table 4 (Appendix B) provides ground water influent analytical results for the system. Table 5 (Appendix B) provides measurements of ground water levels in extraction wells. Water levels in extraction wells are currently measured semi-annually. As a measure of system performance, water levels in extraction wells may be compared to water levels in site monitoring wells (Table 7, Appendix B). System extraction wells are approximately 30 ft in depth and contain pumps which are 5 ft in length. Pumps are set approximately 0.5 ft from the bottom of each well. A water level of approximately 24 to 30 ft bgs in an extraction well is an indicator of optimum performance. Water levels in extraction wells are provided in Table 5 (Appendix B).

Air Sparge System Operation

The air sparge system consists of 14 air injection points (Figure 3, Appendix A). Table 6 (Appendix B) presents air flow readings for each sparge point since system start-up, which are now recorded quarterly. Air is delivered to the injection points at approximately 20 psi.

The AS system was designed to operate in conjunction with the SVE system. Operation of the AS system at its previous flow rate (2 to 10 scfm) without the SVE system in operation to

remove volatilized hydrocarbons is not advisable. Since deactivation of the SVE system, the AS system has been converted to a low-flow system, with a flow rate of less than 1 scfm for each injection point. The purpose of the low flow system is to continue to introduce oxygen into the subsurface, encouraging bioremediation.

On April 24, 2005 the air sparge portion of the remediation system was deactivated for an efficiency evaluation. The air sparge system remained off during the third quarter of 2005.

SYSTEM PERFORMANCE EVALUATION

GWE System Performance Evaluation

System performance may be measured by quantity of hydrocarbons removed. Since hydrocarbons have a very low solubility in water, mass of hydrocarbons removed by a ground water extraction system is typically low relative to the quantity of hydrocarbons sorbed to soil. Another measure of system performance is the system's ability to control the offsite migration of impacted ground water.

During the third quarter of 2005, a total of 301,529 gallons of ground water were extracted by the system (Table 3, Appendix A), at a flow rate of between 0.0 and 3.61 GPM. Hydrocarbon removal is calculated using the ground water influent hydrocarbon concentrations in Table 4 (Appendix B) and the figures for gallons discharged in Table 3 (Appendix A). Assuming the influent stream sample collected on July 7, 2005 was typical for the quarter as a whole (i.e., assuming an average concentration of 270 parts per billion (ppb) for gasoline, 350 ppb for diesel, and 360 ppb for MTBE), then mass of contaminant removed by the GWE system during the third quarter was approximately 0.71 kg of gasoline and diesel and 0.41 kg of MTBE. Quarterly hydrocarbon removal rates are shown in Table 8 and Graph 1 (Appendix B).

Water level measurements are now collected in pumping wells and monitoring wells on a semi-annual basis. Water level measurements in pumping wells and monitoring wells are used to evaluate GWE system performance in terms of drawdown and plume migration control. Figure 2 (Appendix A) shows inferred ground water elevation contours based on the measurements collected during January, 2005. Water levels for GWE wells were measured on April 22, 2005 to evaluate system performance. Measurements are provided in Table 5 (Appendix B).

AS System Performance Evaluation

The most significant measurement of AS system performance is air flow through each wellhead. Air flow is currently 1 scfm or less in each injection point for a total of approximately 14 scfm. Table 6 (Appendix A) shows details of hours of operation and sparge point data.

Thank you for allowing ECM to provide environmental consulting services to Redwood Oil Company. Please call if you have questions or require additional information.

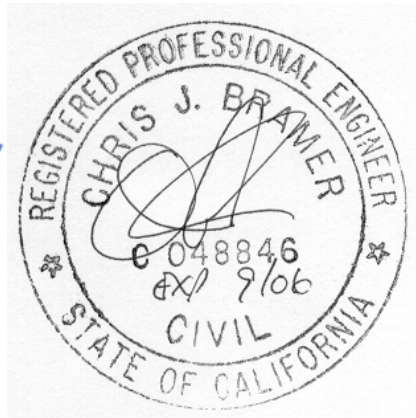
Sincerely,
ECM Group



David Hazard
Staff Scientist



Chris Bramer
Professional Engineer #C048846



Attachments: Appendix A - Figures
 Appendix B - Tables
 Appendix C - Laboratory Analytical Reports and Chain of Custody Record
 Appendix D - Field Notes

cc: Joan Fleck, NCRWQCB

APPENDIX A

FIGURES

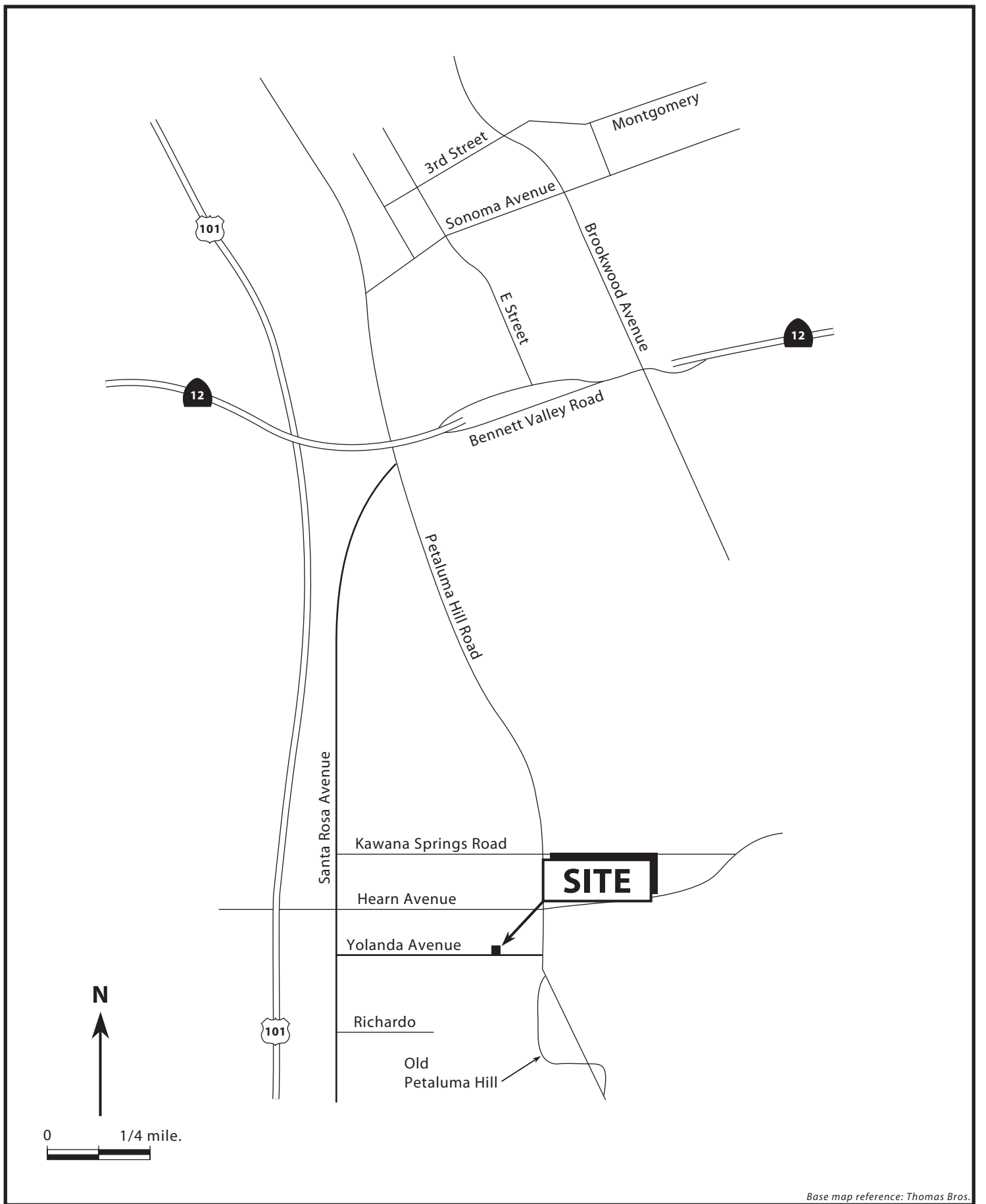


Figure 1. Site Location Map - Redwood Oil Service Station, 455 Yolanda Avenue, Santa Rosa, California

MW-21

Monitoring well

GWE/SVE-13

Ground water extraction, soil vapor extraction well

AS-13

Air injection well

Water return line

Vapor return line

Air supply lines for sparge points and GWE wells not shown.

Figure 3. Remediation System - Plan View - 455 Yolanda Avenue, Santa Rosa, California

98-507-95 [RemedSys 9_01 11x17 no data] 11/09/01

Ground Water Extraction Well

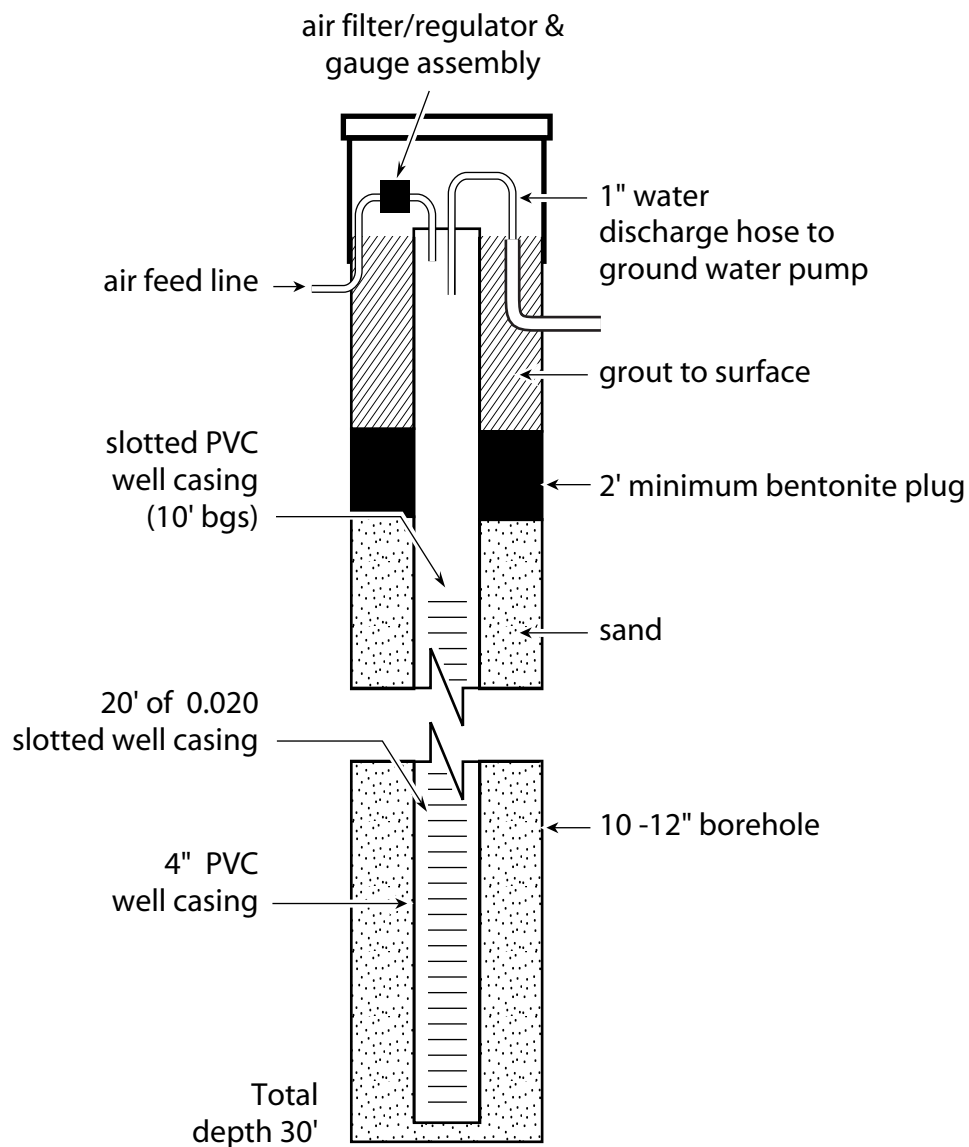


Figure 4. □ Groundwater Extraction Well Diagram - Redwood Oil Bulk Plant - 455 Yolanda, Santa Rosa, California

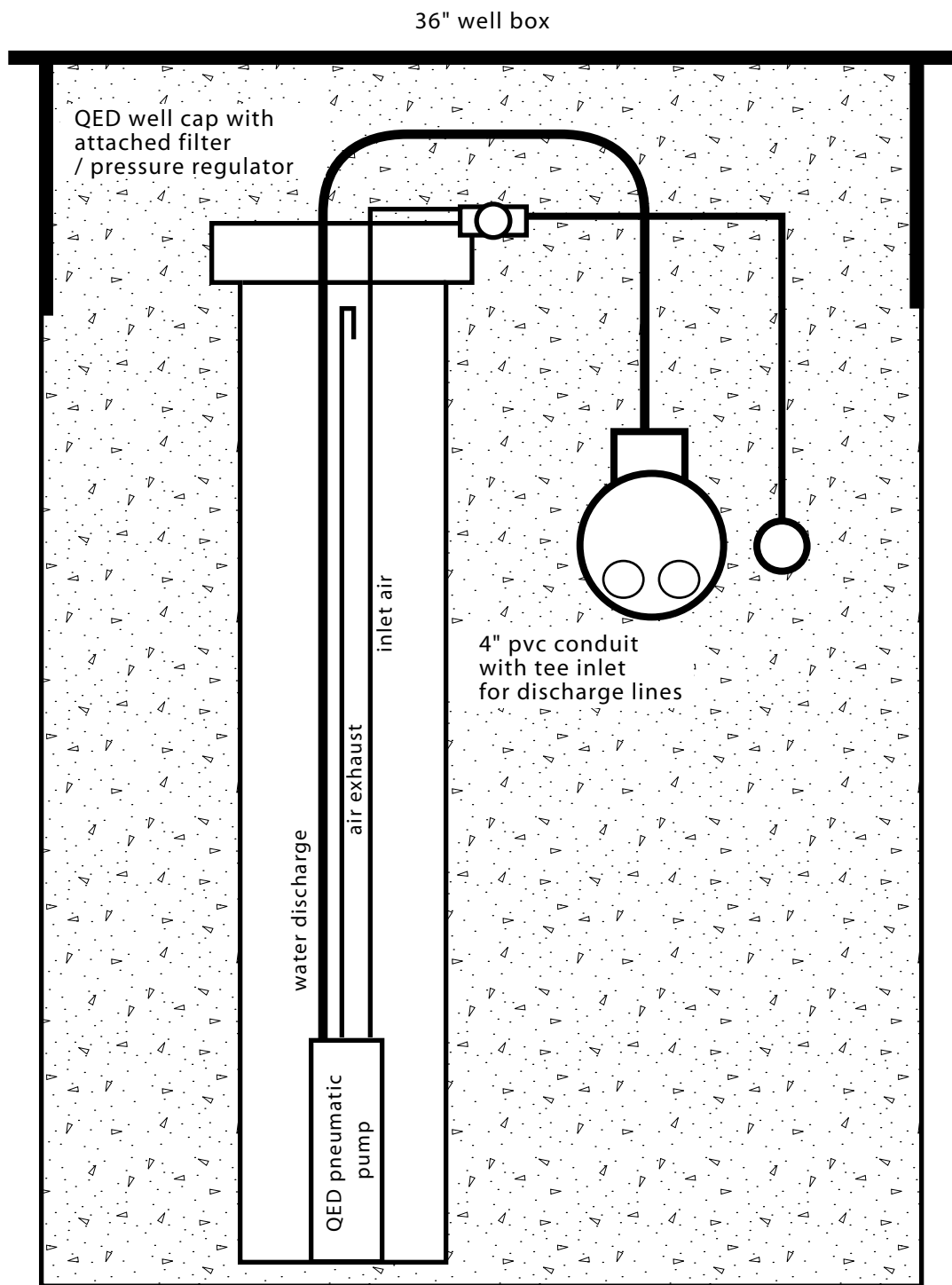


Figure 5. □ Groundwater Extraction Well Head Detail - Redwood Oil Bulk Plant - 455 Yolanda, Santa Rosa, California

Soil Vapor Extraction Well

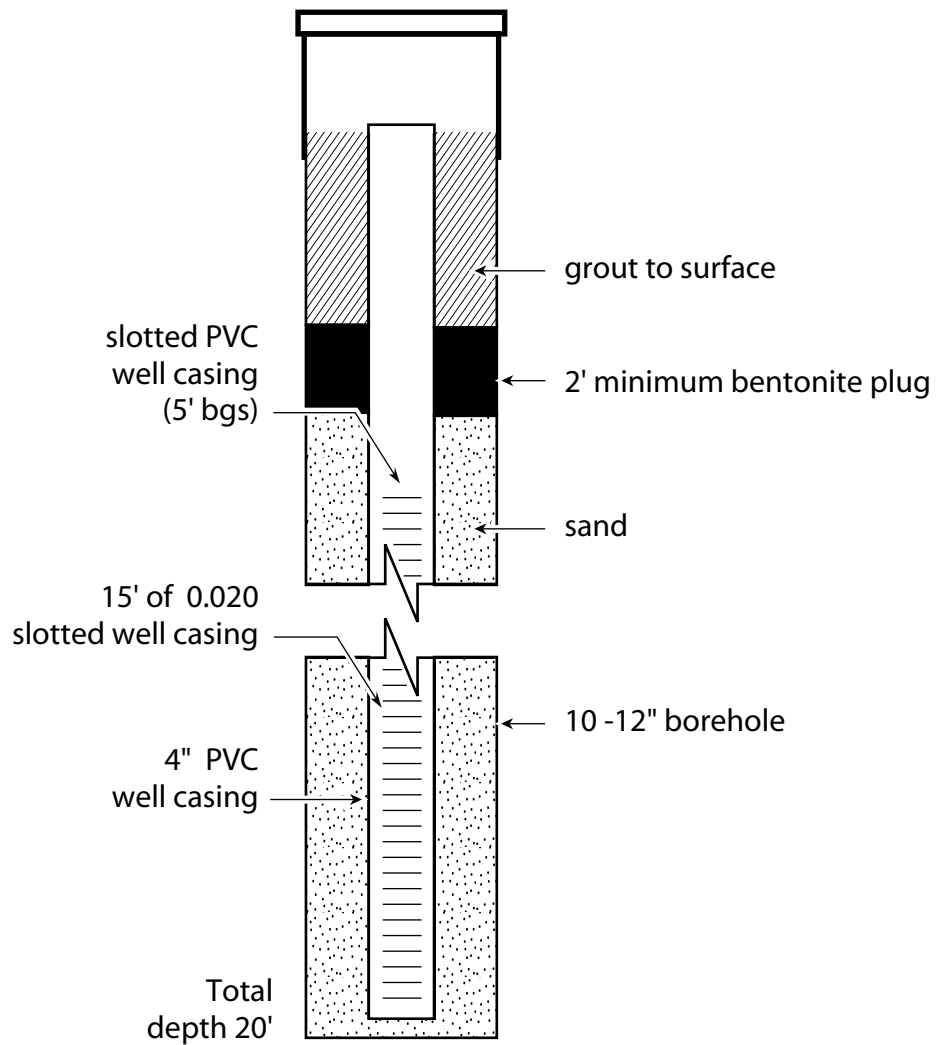


Figure 6. □ Soil Vapor Extraction Well Diagram - Redwood Oil Bulk Plant - 455 Yolanda, Santa Rosa, California

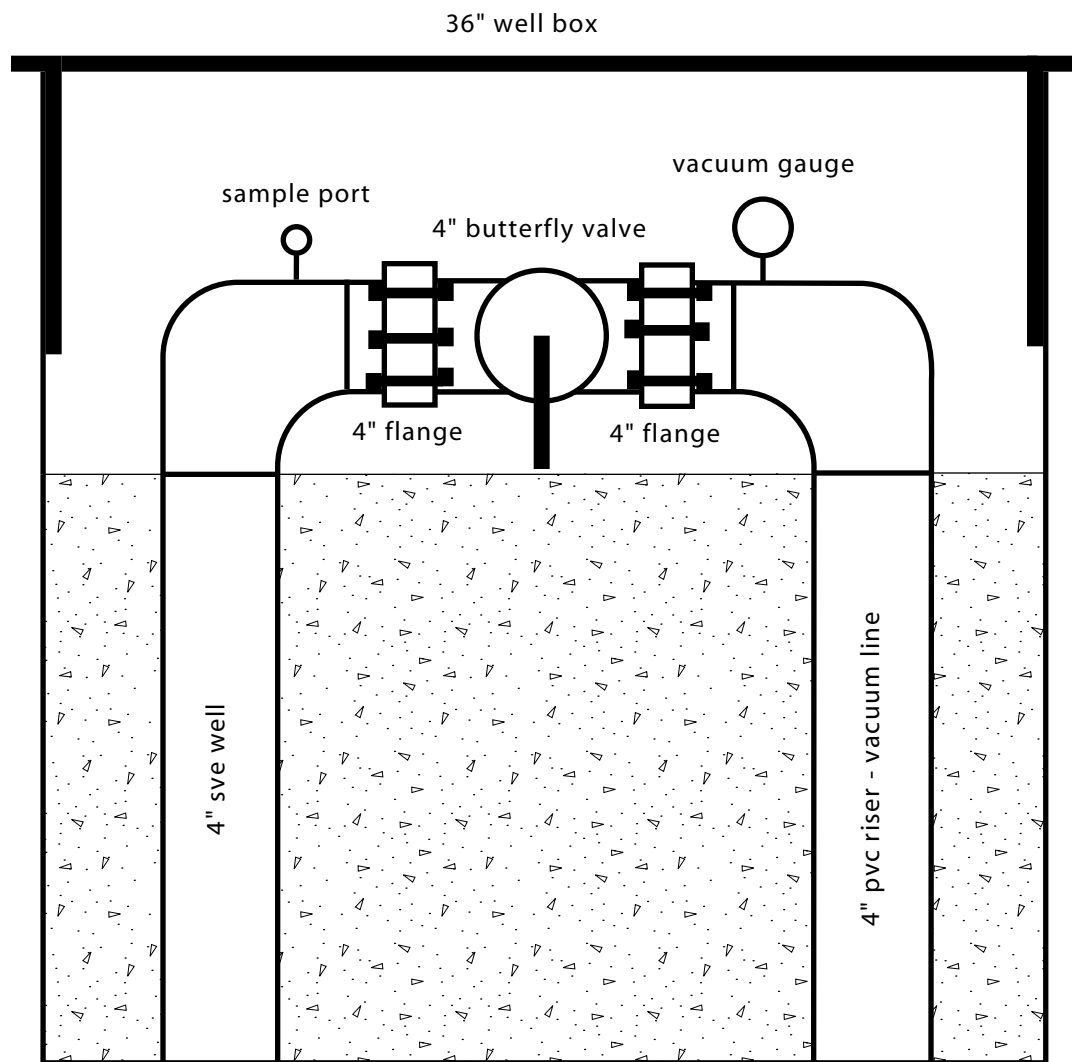


Figure 7. □ Soil Vapor Extraction Well Head Detail - Redwood Oil Bulk Plant - 455 Yolanda, Santa Rosa, California

36" well box

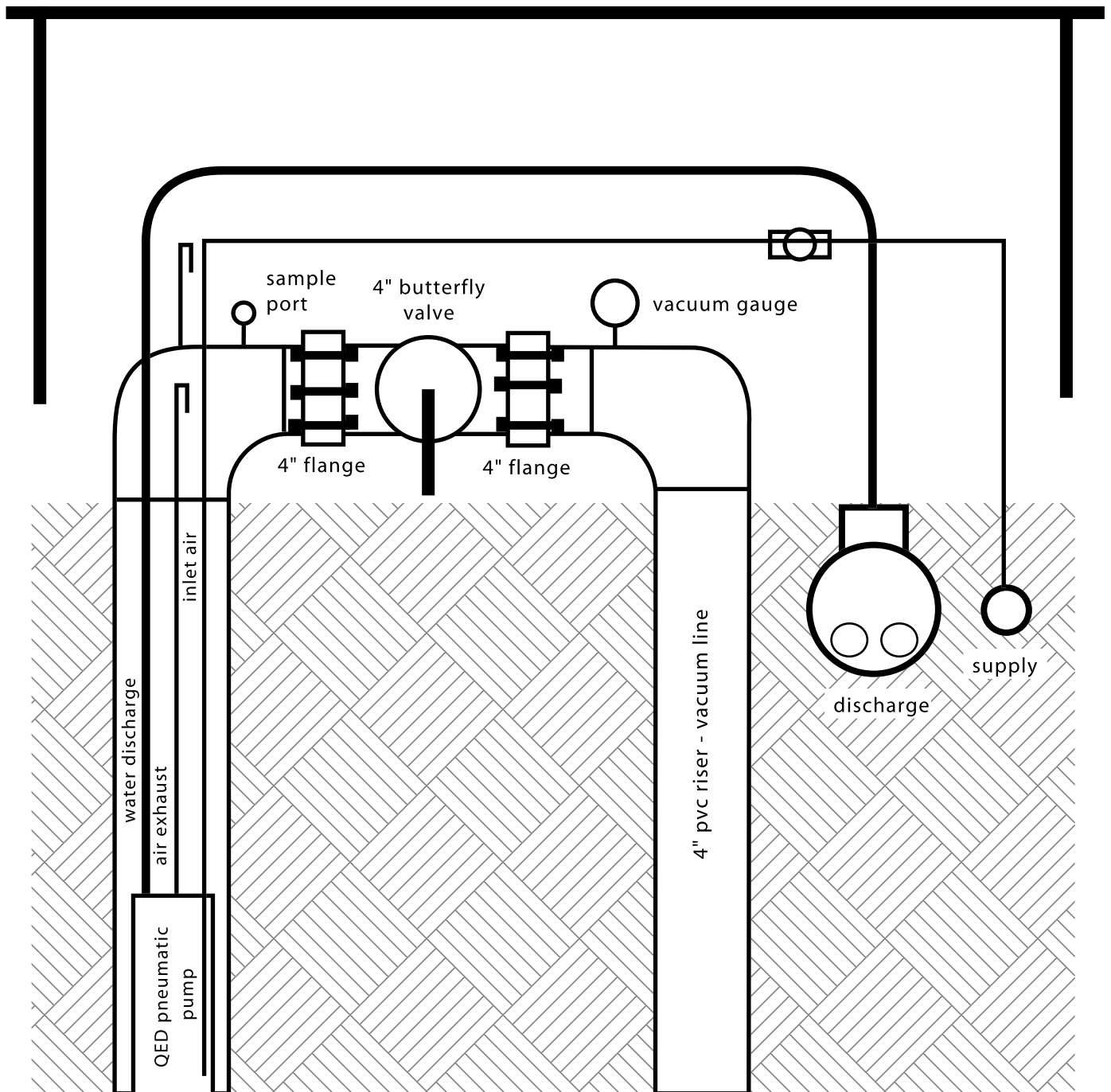


Figure 8. Combined Ground Water and Soil Vapor Extraction Well Head Detail - Redwood Oil Bulk Plant - 455 Yolanda, Santa Rosa, California

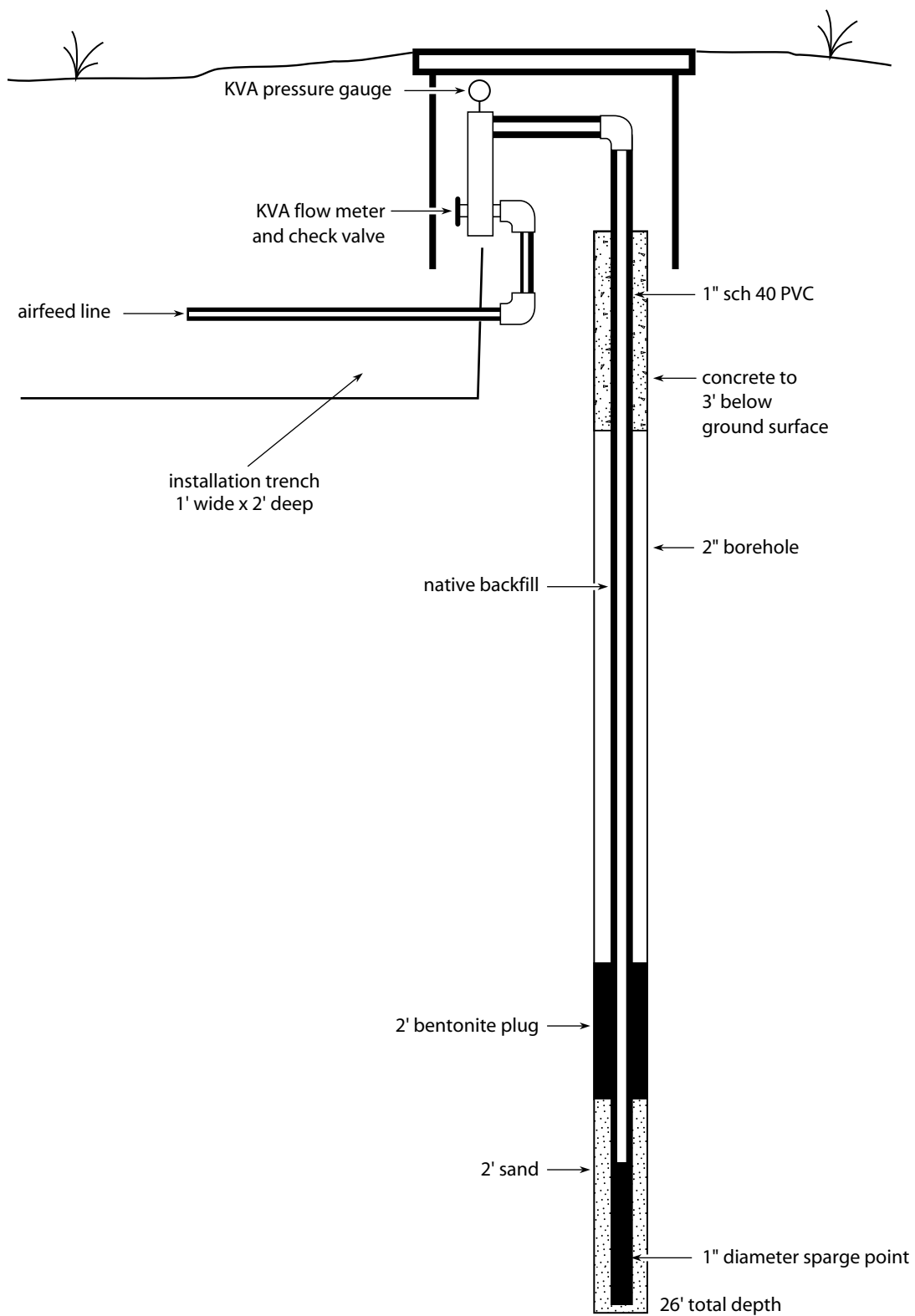


Figure 9. □ Air Injection Well Diagram - Redwood Oil Bulk Plant - 455 Yolanda, Santa Rosa, California

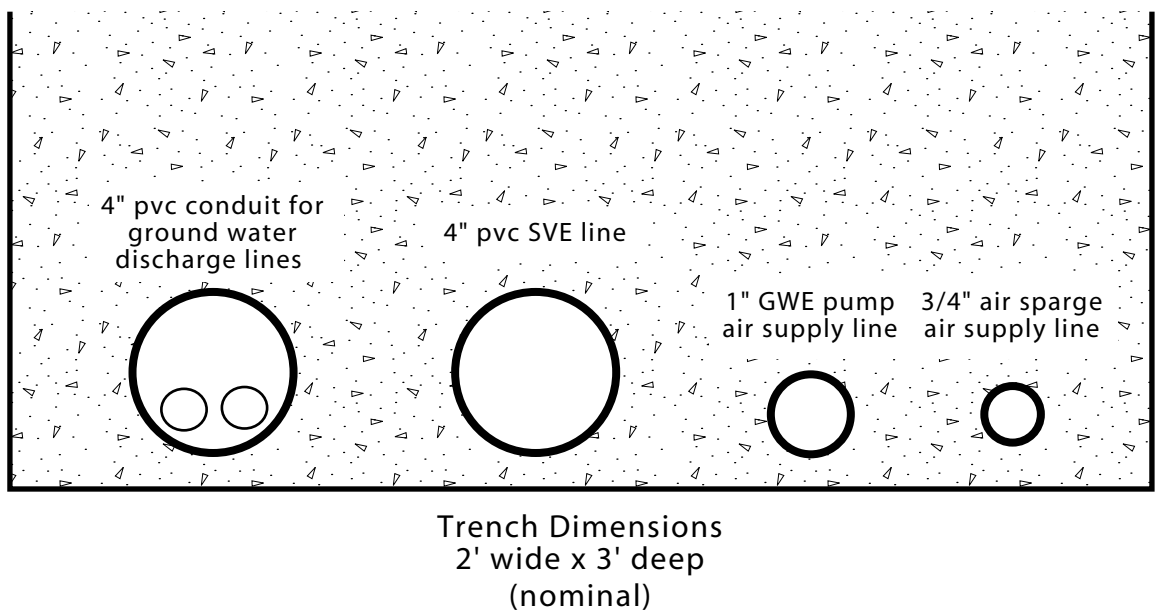
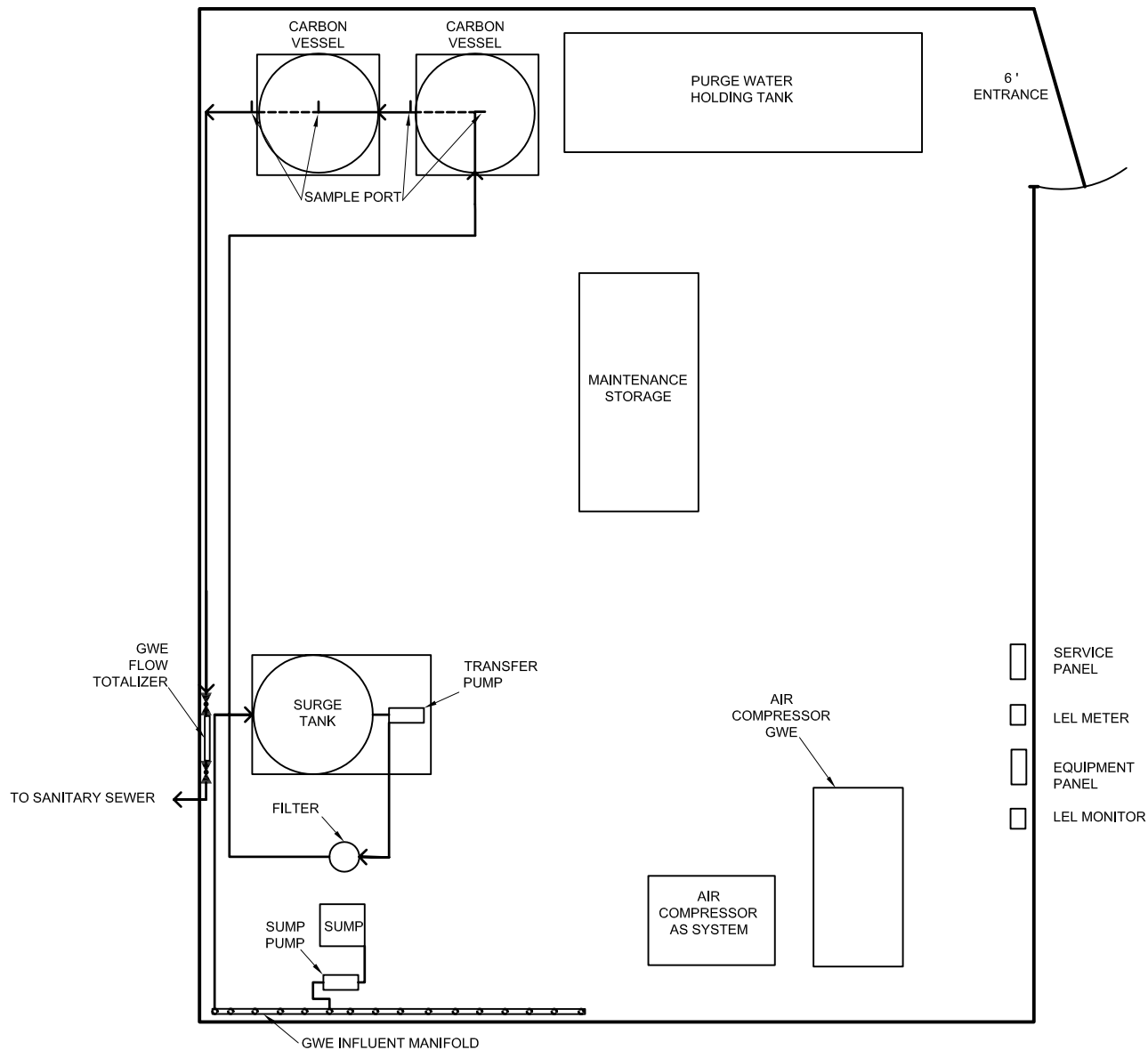


Figure 10. Pipe Trench Detail - Redwood Oil Bulk Plant - 455 Yolanda, Santa Rosa, California



PROJECT
REMEDIATION SYSTEM
 Redwood Oil Bulk Plant,
 455 Yolanda Avenue, Santa Rosa California

DRAWING
WATER SYSTEM

PROJECT NUMBER **98-507-95**

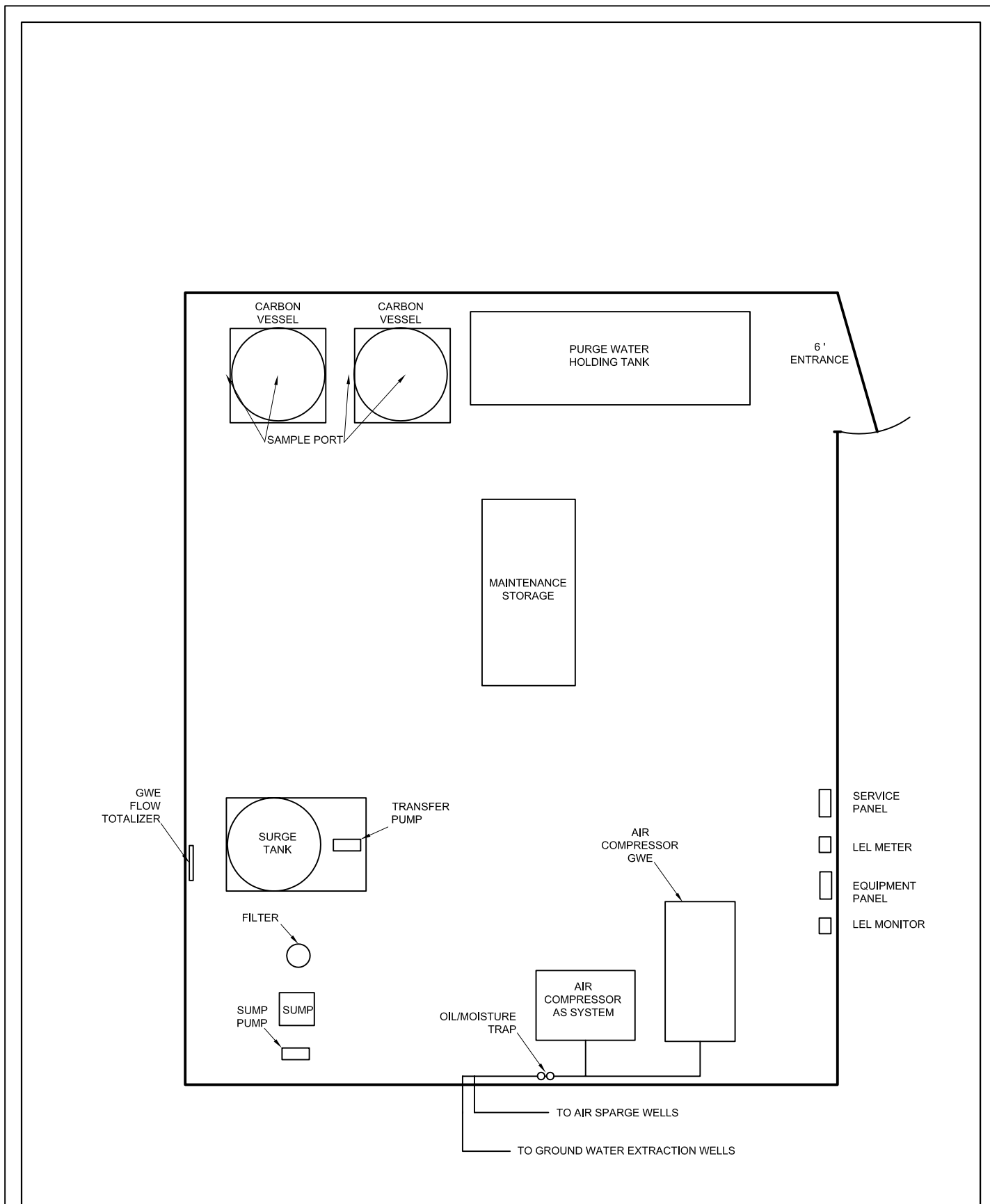
ORIGINAL DATE

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FIGURE NUMBER **11**



PROJECT
REMEDIATION SYSTEM
 Redwood Oil Bulk Plant,
 455 Yolanda Avenue, Santa Rosa California

DRAWING
AIR SYSTEM

PROJECT NUMBER **98-507-95**

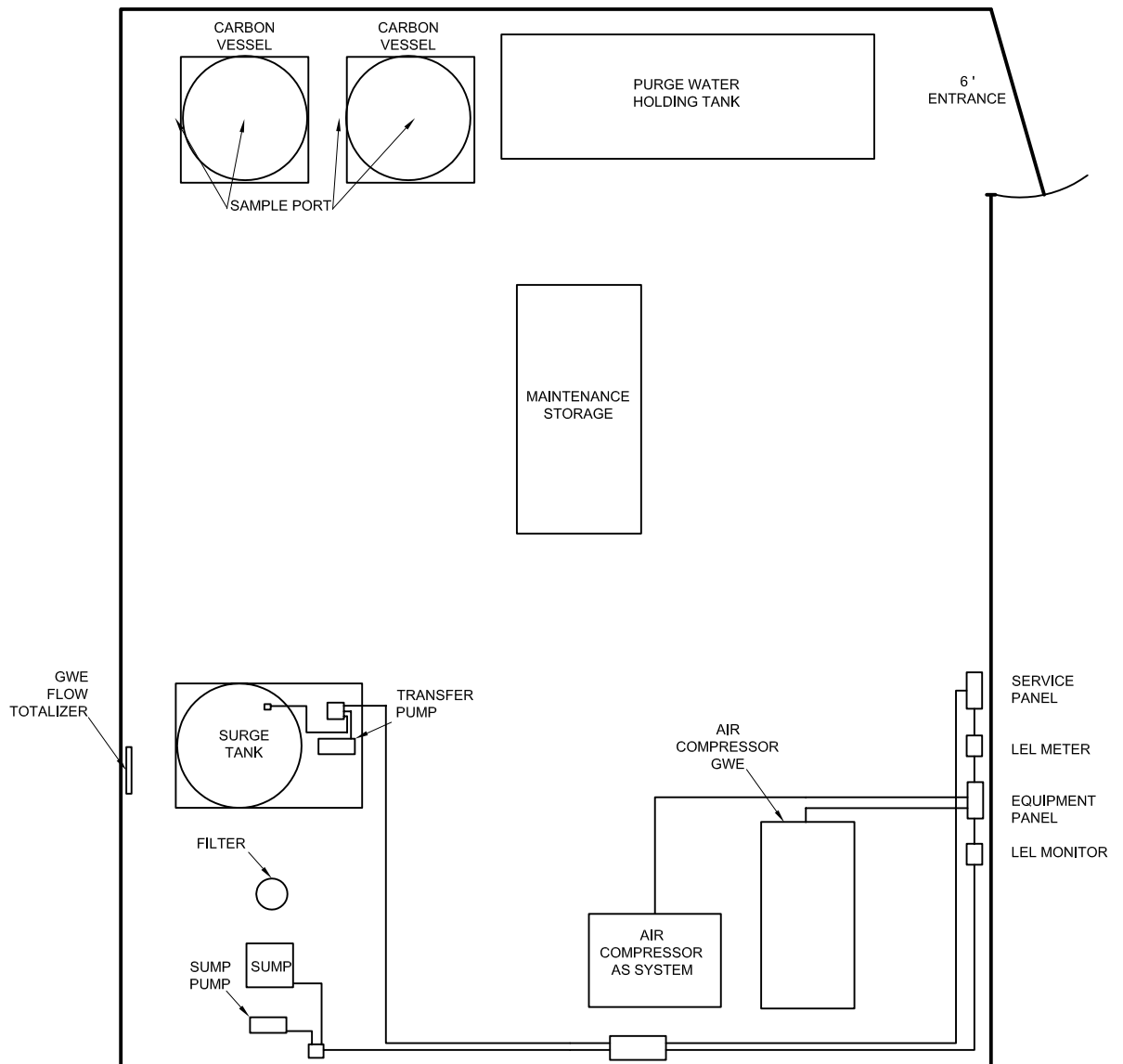
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FIGURE NUMBER **12**



PROJECT
REMEDIATION SYSTEM
 Redwood Oil Bulk Plant,
 455 Yolanda Avenue, Santa Rosa California

DRAWING
ELECTRICAL SYSTEM

PROJECT NUMBER **98-507-95**

ORIGINAL DATE

REVISION DATE **2/10/05**

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FIGURE NUMBER **13**

APPENDIX B
TABLES & GRAPHS

Table 1. Vapor Extraction System Flow Calculations - Redwood Oil Company Bulk Plant, 455 Yolanda, Santa Rosa, California

Date	Influent Concentration (ppm)	Influent Concentration $\mu\text{g}/\text{l}^2$	Removal Rate Kg/day^3
7/27/01	327	1,360	11.7
8/1/01	214	890	7.7
8/2/01 ¹	200.23	834.2	7.2
8/10/01	256	1,064	9.2
8/20/01	224	931	8.0
9/12/01 ¹	52.51	222.1	1.9
9/25/01	102	424	3.6
10/5/01	118	490	4.2
10/16/01	242	1,006	8.7
11/2/01	120	499	4.3
11/9/01	97	403	3.5
12/12/01 ¹	162.6	681	5.8
3/12/02 ⁴	2.6	10.8	0.1
3/29/02 ⁵	321	1,334	11.4
4/5/02	5.2	21.6	0.2
4/26/02	0	0	0
5/16/02	4.3	17.9	0.2
5/24/02	6.5	27.0	0.2

Table 1. Vapor Extraction System Flow Calculations - Redwood Oil Company Bulk Plant, 455 Yolanda, Santa Rosa, California

Date	Influent Concentration (ppm)	Influent Concentration $\mu\text{g}/\text{l}^2$	Removal Rate Kg/day^3
5/29/02	3.6	14.9	0.1
6/7/02	4.3	17.9	0.2
6/13/02	3.2	13.3	0.1
6/28/02	2.3	9.6	0.1
7/2/02	3.8	15.8	0.1
7/19/02	148	615.2	5.2
7/25/02	4.7	19.5	0.2
8/1/02	205	852.2	7.2
8/8/02	2.3	9.6	0.1
8/14/02 ¹	121	504.4	4.3
8/16/02	4.7	19.5	0.2
9/9/02 ⁶	29.9	124.3	1.1
9/10/02	4.3	17.9	0.2
9/16/02 ⁷	58.6 / 9.9	243.6 / 41.2	2.1 / 0.35
9/27/02 ⁷	10 / 2.9	41.6 / 12.0	0.36 / 0.1
10/2/02	1.8	7.5	0.1
10/11/02	2.3	9.6	0.1
10/18/02	2.2	9.1	0.1

Table 1. Vapor Extraction System Flow Calculations - Redwood Oil Company Bulk Plant, 455 Yolanda, Santa Rosa, California

Date	Influent Concentration (ppm)	Influent Concentration $\mu\text{g}/\text{l}^2$	Removal Rate Kg/day^3
10/20/02	2.0	8.3	0.1
11/11/02	2.4	10.0	0.1
11/22/02 ¹	4.4	18.3	0.2
11/27/02 ¹	1.8	7.5	0.1
12/4/02 ¹	1.2	5.0	<0.1
12/13/02	1.4	5.8	<0.1
12/20/02	0.6	2.5	<0.1
12/27/02	1.2	5.0	<0.1
1/3/03	1.9	7.9	0.1
1/10/03	1.6	6.7	0.1
1/16/03	0.6	2.5	<0.1
1/29/03	0.6	2.5	<0.1
2/7/03	0.9	3.7	<0.1
2/11/03 ⁸	2.5	10.4	0.1
2/14/03 ⁸	12.2	51	0.4
2/28/03 ⁸	1.6	6.7	<0.1
3/4/03 ⁸	10	42	0.4
3/11/03 ⁸	1.2	5	<0.1
3/28/03	2.5	10.4	0.1

Table 1. Vapor Extraction System Flow Calculations - Redwood Oil Company Bulk Plant, 455 Yolanda, Santa Rosa, California

Date	Influent Concentration (ppm)	Influent Concentration $\mu\text{g}/\text{l}^2$	Removal Rate Kg/day^3
6/6/03	0	0	<0.1
6/18/03	1	4	<0.1
6/27/03	0	0	<0.1
7/3/03	0	0	<0.1
7/11/03	0	0	<0.1
7/17/03	0	0	<0.1
7/25/03	0	0	<0.1
7/31/03	0	0	<0.1
8/8/03	0	0	<0.1
8/14/03	0	0	<0.1
8/19/03	0	0	<0.1

Explanation:

ppmv = parts per million (volume)

$\mu\text{g}/\text{l}$ = micrograms/liter

kg/day = kilograms/day

Table 1. Vapor Extraction System Flow Calculations - Redwood Oil Company Bulk Plant, 455 Yolanda, Santa Rosa, California

NOTES:

¹ ppm and ug/l reported from samples submitted to Air Toxics, Ltd, Folsom, CA.

² µg/l values calculated using the following equation: $\mu\text{g/l} = \text{ppmv} \times \text{molecular weight} / 24.055$. Assumed molecular weight of gasoline = 100. Equation provided by Air Toxics Analytical Laboratory

³ kg/day calculations are based on system flow of 210 SCFM (standard cubic feet per minute).

⁴ Thermal oxidation unit inoperative from 12/31/01 through 2/21/02 due to mechanical failure.

⁵ Thermal oxidation unit inoperative from 3/15/02 through 3/19/02 due to mechanical failure.

⁶ SVE system inoperative between 8/16/02 and 9/9/02 in order to determine whether temporary shutdown would improve SVE system performance.

⁷ PPMV reading taken with Flame Ionization Detector (first measurement shown) and also with Photo Ionization Detector (second measurement taken).

⁸ System modified; subsequent to 2/11/03, only SVE wells 3, 5, and 7 operative.

Table 2. Flow Measurements and Vapor Concentration in Vapor Extraction Wells - Redwood Oil Company Bulk Plant, 455 Yolanda, Santa Rosa, California

Well I.D. #	Date	Flow Velocity ft/minute	Flow Rate (SCFM) ¹	Vapor Concentration (ppmv)	Vapor Concentration µg/l ²	TPH(G) Removal Rate grams/day
GWE/SVE-1	10/16/01	2,000	43.6	68	283	503
	11/2/01	2,250	49.1	15	62	123
	12/12/01	3,200	69.8	3	12	34
	8/1/02	2,200	48	5	21	41
	9/27/02	3,400	74.2	4.9	20	60
	10/11/02	3,600	78.5	4.3	18	58
	2/11/03	4,500	98.2	3.8	16	64
GWE/SVE-2	10/16/01	200	4.4	615	2,557	459
	11/2/01	250	5.4	223	927	204
	12/12/01	75	1.6	214	890	58
	8/1/02	150	3.3	320	1,330	179
	9/27/02	300	6.5	16.9	70	18.5
	10/11/02	350	7.6	12.2	51	16
	2/11/03	150	3.3	51.6	216	29
	2/14/03	250	5.5	50	209	47
GWE/SVE-3	10/16/01	1,200	26.2	391	1,625	1,736
	11/2/01	1,250	27	92	382	420
	12/12/01	650	14	119	495	282

Table 2. Flow Measurements and Vapor Concentration in Vapor Extraction Wells - Redwood Oil Company Bulk Plant, 455 Yolanda, Santa Rosa, California

Well I.D. #	Date	Flow Velocity ft/minute	Flow Rate (SCFM) ¹	Vapor Concentration (ppmv)	Vapor Concentration µg/l ²	TPH(G) Removal Rate grams/day
GWE/SVE-3	8/1/02	1,500	32.7	278	1,156	1,540
	9/27/02	1,700	37.1	5.6	23	35
	10/11/02	2,000	43.6	4.3	18	32
	2/11/03	400	8.7	55.3	231	82
	2/14/03	2,000	43.6	17.2	72	128
GWE/SVE-4	10/16/01	90	2.0	16	67	5.5
	11/2/01	100	2.2	17	71	6
	12/12/01	50	1.1	2	8	0.4
	8/1/02	0	0	54	224	0
	9/27/02	0	0	0	0	0
	10/11/02	0	0	0	0	0
	2/11/03	3,000	65.4	7.6	32	85
GWE/SVE-5	10/16/01	550	12.0	12	50	24
	11/2/01	175	3.8	3	12	2
	12/12/01	150	3.2	67	278	36
	8/1/02	2,000	43.6	0	0	0
	9/27/02	1,400	30.5	0	0	0
	10/11/02	1,500	32.7	0	0	0

Table 2. Flow Measurements and Vapor Concentration in Vapor Extraction Wells - Redwood Oil Company Bulk Plant, 455 Yolanda, Santa Rosa, California

Well I.D. #	Date	Flow Velocity ft/minute	Flow Rate (SCFM) ¹	Vapor Concentration (ppmv)	Vapor Concentration µg/l ²	TPH(G) Removal Rate grams/day
GWE/SVE-6	2/11/03	2,000	43.6	5.2	22	39
	10/16/01	3,300	72.0	165	686	2,013
	11/2/01	2,750	59.5	63	262	635
	12/12/01	2,600	56	169	702	1,602
	8/1/02	310	6.8	0	0	0
	9/27/02	2,800	61.1	0	0	0
	10/11/02	3,200	69.8	0	0	0
	2/11/03	3,000	65.4	3.5	15	40
GWE/SVE-7	10/16/01	1,550	33.8	254	1,056	1,455
	11/2/01	300	6.5	63	262	69
	12/12/01	200	4.3	122	507	89
	8/1/02	3,100	67.6	36.8	153	421
	9/27/02	3,400	74.2	23	96	290
	10/11/02	3,400	74.2	2.3	10	30
	2/11/03	1,500	32.7	6.9	29	39
	2/14/03	6,000	130.8	10.3	43	229
GWE/SVE-8	10/16/01	3,500	76.4	288	1,198	3,731
	11/2/01	550	11.9	153	636	308

Table 2. Flow Measurements and Vapor Concentration in Vapor Extraction Wells - Redwood Oil Company Bulk Plant, 455 Yolanda, Santa Rosa, California

Well I.D. #	Date	Flow Velocity ft/minute	Flow Rate (SCFM) ¹	Vapor Concentration (ppmv)	Vapor Concentration µg/l ²	TPH(G) Removal Rate grams/day
GWE/SVE-9	12/12/01	2,500	54	122	507	1,116
	8/1/02	4,500	98.2	0	0	0
	9/27/02	4,800	104.7	0	0	0
	10/11/02	4,200	91.6	0.3	1	4
	2/11/03	3,500	76.4	3.2	13	40
GWE-10	10/16/01	290	6.3	370	1,538	395
	11/2/01	100	2.2	37	154	14
	12/12/01	300	6.5	12	50	13
	8/1/02	5,500	120.0	89.4	372	1,819
	9/27/02	---	---	---	---	---
	10/11/02	450	9.8	1.6	7	3
	2/11/03	500	10.9	0.8	3	1

Table 2. Flow Measurements and Vapor Concentration in Vapor Extraction Wells - Redwood Oil Company Bulk Plant, 455 Yolanda, Santa Rosa, California

Well I.D. #	Date	Flow Velocity ft/minute	Flow Rate (SCFM) ¹	Vapor Concentration (ppmv)	Vapor Concentration µg/l ²	TPH(G) Removal Rate grams/day
SVE-11	10/16/01	2,250	49.0	118	490	979
	11/2/01	425	9.2	36	150	56
	12/12/01	16	0.3	8	33	0.4
	8/1/02	2,600	56.7	0	0	0
	9/27/02	2,800	61.1	0	0	0
	10/11/02	3,000	65.4	0	0	0
	2/11/03	6,000	130.9	1.1	5	27
SVE-12	10/16/01	1,750	38.2	93	387	600
	11/2/01	350	7.6	18	75	23
	12/12/01	350	7.6	10	42	13
	8/1/02	2,900	63.3	5.2	22	57
	9/27/02	2,700	59.0	0	0	0
	10/11/02	3,500	76.3	1.6	7	22
	2/11/03	2,500	54.5	0.8	3	7

Table 2. Flow Measurements and Vapor Concentration in Vapor Extraction Wells - Redwood Oil Company Bulk Plant, 455 Yolanda, Santa Rosa, California

Well I.D. #	Date	Flow Velocity ft/minute	Flow Rate (SCFM) ¹	Vapor Concentration (ppmv)	Vapor Concentration µg/l ²	TPH(G) Removal Rate grams/day
SVE-13	10/16/01	75	1.6	499	2,074	135
	11/2/01	100	2.2	119	495	44
	12/12/01	175	3.8	32	133	21
	8/1/02	65	1.4	5	21	1.2
	9/27/02 ³	---	---	---	---	---
	10/11/02 ³	---	---	---	---	---
	2/11/03	75	1.6	1.1	5	<1

Explanation:

SCFM = Standard Cubic Feet per Minute

ppmv = parts per million (volume)

µg/l = micrograms per liter

NOTES:

¹ Flow measured in 2" PVC vapor conduit.

² µg/l values calculated using the following equation: µg/l = ppmv x molecular weight/24.055. Assumed molecular weight of gasoline = 100.

³ Well-box obstructed by vehicle on day of measurement

Table 3. Groundwater Extraction System Totalizer Readings - Redwood Oil Company Bulk Plant, 455 Yolanda, Santa Rosa, California

Date	Totalizer Reading (gal)	Total Discharged (gallons)	Average Flow Rate Since Previous Reading (gal/min)
5/16/01	333,054	333,054	
5/17/01	334,485	334,485	1.0
5/18/01	337,192	337,192	1.9
5/21/01	341,448	341,448	1.0
5/23/01	345,424	345,424	1.4
6/18/01	379,840	379,840	0.9
7/3/01	400,300	400,300	0.9
7/27/01	457,596	457,596	1.7
8/1/01	467,182	467,182	1.3
8/10/01	481,662	481,662	1.1
8/17/01	591,601	495,282 ²	_____ ¹
8/20/01	592,000	492,282	_____ ³
8/21/01	592,585	492,867	0.5
8/28/01	602,096	502,378	0.9
9/18/01	627,180	527,462	0.8
9/27/01	638,418	538,700	0.9
10/5/01	648,212	548,494	0.9
10/11/01	655,388	555,670	1.1
10/22/01	667,676	567,958	0.8
11/2/01	678,091	578,373	0.6
11/5/01	681,100 / 0 ⁴	581,382	0.7
11/9/01	6,898	588,280	1.2
11/14/01	14,379	595,761	1.0
11/20/01	23,124	604,506	1.0
12/4/01	54,225	635,607	1.6
12/10/01	72,000	653,382	2.1

Table 3. Groundwater Extraction System Totalizer Readings - Redwood Oil Company Bulk Plant, 455 Yolanda, Santa Rosa, California

Date	Totalizer Reading (gal)	Total Discharged (gallons)	Average Flow Rate Since Previous Reading (gal/min)
12/17/01	93,341	674,723	2.1
12/26/01	127,051	708,433	2.6
12/31/01	149,385	730,767	3.1
1/2/02	163,000	744,382	4.7
1/11/02	166,771	748,153	--- ⁵
1/15/02	190,661	772,043	4.3
1/21/02	218,788	800,170	3.1
1/29/02	254,008	835,390	3.1
2/7/02	291,624	873,006	2.9
2/14/02	322,948	904,330	3.1
2/21/02	350,361	931,743	2.7
2/27/02	381,973	963,355	3.6
3/4/02	404,348	982,730	2.7
3/11/02	436,581	1,014,963	3.2
3/19/02	473,249	1,051,631	3.2
3/29/02	522,327	1,100,709	3.4
4/5/02	554,720	1,133,102	3.2
4/19/02	607,648	1,186,030	2.6
4/26/02	705,092	1,283,474	9.7
5/2/02	729,422	1,307,804	2.8
5/6/02	764,815	1,343,197	6.1
5/8/02	771,814	1,350,196	2.4
5/16/02	799,857	1,378,239	2.4
5/21/02	817,770	1,396,152	2.5
5/29/02	848,015	1,426,397	2.6
6/7/02	881,299	1,459,681	2.6

Table 3. Groundwater Extraction System Totalizer Readings - Redwood Oil Company Bulk Plant, 455 Yolanda, Santa Rosa, California

Date	Totalizer Reading (gal)	Total Discharged (gallons)	Average Flow Rate Since Previous Reading (gal/min)
6/13/02	881,880	1,460,262	--- ⁶
6/21/02	912,812	1,491,194	2.7
7/2/02	951,716	1,530,098	2.3
7/11/02	969,631	1,540,013	1.4
7/19/02	995,237	1,565,619	2.2
7/25/02	1,010,942	1,581,324	1.8
8/1/02	1,028,370	1,616,180	1.7
8/8/02	1,044,852	1,632,662	1.6
8/16/02	1,055,510	1,643,314	0.9
8/21/02	1,066,819	1,654,623	1.6
8/29/02	1,082,857	1,670,661	1.4
9/5/02	1,096,024	1,683,828	1.3
9/13/02	1,112,062	1,699,866	1.4
10/2/02	1,145,714	1,733,518	1.2
10/11/02	1,172,292	1,760,096	2.1
10/18/02	1,177,193	1,764,997	--- ⁷
10/30/02	10,352	1,775,193	---
11/1/02	13,802	1,778,799	2.4
11/5/02	19,338	1,784,335	1.0
11/11/02	25,831	1,790,828	0.8
11/22/02	54,157	1,819,154	1.8
12/4/02	72,416	1,837,413	1.1
12/13/02	89,375	1,854,372	1.3
12/20/02	134,082	1,899,079	4.4
12/30/02	190,593	1,955,590	3.9
1/3/03	215,750	1,980,747	4.4

Table 3. Groundwater Extraction System Totalizer Readings - Redwood Oil Company Bulk Plant, 455 Yolanda, Santa Rosa, California

Date	Totalizer Reading (gal)	Total Discharged (gallons)	Average Flow Rate Since Previous Reading (gal/min)
1/10/03	248,269	2,013,266	3.2
1/16/03	279,443	2,044,440	3.6
1/29/03	345,364	2,110,361	3.5
2/7/03	390,854	2,155,851	3.5
2/11/03	408,237	2,173,234	3.0
2/13/03	415,355	2,180,352	2.5
2/18/03	438,355	203,352	3.2
2/28/03	482,319	2,247,316	3.1
3/11/03	529,021	2,294,018	2.9
3/18/03	559,049	2,324,046	3.0
3/28/03	603,783	2,368,780	3.1
4/10/03	664,796	2,429,793	3.2
4/18/03	702,565	2,467,562	3.3
4/25/03	737,250	2,502,247	3.4
5/2/03	774,884	2,539,881	3.7
5/14/03	844,660	2,609,657	4.0
5/22/03	890,318	2,655,315	4.0
5/29/03	910,691	2,675,688	2.0
6/6/03	953,142	2,718,139	3.7
6/17/03	1,012,384	2,777,381	3.7
6/20/03	1,028,586	2,793,583	3.8
6/27/03	1,075,339	2,840,336	4.6
7/3/03	1,089,455	2,854,452	1.6
7/11/03	1,098,458	2,863,455	0.8
7/17/03	1,157,284	2,922,281	6.8
7/25/03	1,196,119	2,961,116	3.4

Table 3. Groundwater Extraction System Totalizer Readings - Redwood Oil Company Bulk Plant, 455 Yolanda, Santa Rosa, California

Date	Totalizer Reading (gal)	Total Discharged (gallons)	Average Flow Rate Since Previous Reading (gal/min)
7/30/03	1,217,345	2,982,342	2.9
8/8/03	1,277,728	3,042,779	4.7
8/14/03	1,306,709	3,071,706	3.3
8/19/03	1,322,407	3,087,404	2.2
8/29/03	1,332,846	3,097,843	0.7
9/5/03	1,347,945	3,112,942	1.5
9/12/03	1,351,475	3,116,742	0.4
9/26/03	1,370,697	3,135,694	0.9
10/3/03	1,379,064	3,144,061	0.8
10/10/03	1,386,120	3,151,117	0.7
10/17/03	1,391,959	3,156,956	0.6
10/24/03	1,397,544	3,162,541	0.6
10/31/03	1,403,823	3,168,820	0.6
11/7/03	1,410,468	3,175,465	0.7
11/18/03	1,412,090	3,177,087	0.1
12/5/03	1,425,363	3,190,360	0.5
12/22/03	1,436,251	3,201,248	0.4
12/30/03	1,439,644	3,204,641	0.3
1/7/04	1,440,581	3,205,578	0.1
1/14/04	1,445,512	3,210,509	0.5
1/29/04	1,489,433	3,254,430	2.0
2/13/04	1,516,076	3,281,073	1.2
2/27/04	1,544,114	3,309,111	1.4
3/3/04	1,554,424	3,319,421	1.4
3/10/04	1,568,474	3,333,471	1.4
3/16/04	1,578,867	3,343,864	1.2

Table 3. Groundwater Extraction System Totalizer Readings - Redwood Oil Company Bulk Plant, 455 Yolanda, Santa Rosa, California

Date	Totalizer Reading (gal)	Total Discharged (gallons)	Average Flow Rate Since Previous Reading (gal/min)
3/25/04	1,595,581	3,360,578	1.3
3/31/04	1,597,170	3,362,167	0.2
4/9/04	1,611,753	3,376,750	1.1
4/16/04	1,621,268	3,386,265	0.9
4/23/04	1,629,798	3,394,795	0.8
5/3/04	1,636,948	3,401,945	0.4
5/4/04	1,636,997	3,401,994	0 ⁸
5/10/04	1,643,162	3,408,159	0.7
5/21/04	1,653,412	3,418,409	0.6
5/28/04	1,659,764	3,424,761	0.6
6/4/04	1,665,917	3,430,914	0.6
6/14/04	1,668,218	3,433,215	0.2
6/22/04	1,670,654	3,435,651	0.2
7/2/04	1,677,769	3,442,766	0.5
7/16/04	1,688,358	3,453,355	0.5
7/19/04	1,693,629	3,458,626	1.3
7/23/04	1,703,653	3,468,650	1.7
7/30/04	1,714,343	3,479,340	1.1
8/6/04	1,721,680	3,486,677	0.7
8/13/04	1,721,680	3,493,733	0.7 ⁹
8/20/04	1,721,804	3,500,789	0.7 ⁹
8/26/04	1,721,804	3,506,837	0.7 ⁹
8/27/04	1,722,930	3,507,963	0.8
9/1/04	1,727,430	3,509,463	0.6
9/7/04	1,732,954	3,517,987	0.6
9/10/04	1,735,768	3,520,801	0.6

Table 3. Groundwater Extraction System Totalizer Readings - Redwood Oil Company Bulk Plant, 455 Yolanda, Santa Rosa, California

Date	Totalizer Reading (gal)	Total Discharged (gallons)	Average Flow Rate Since Previous Reading (gal/min)
9/17/04	1,741,255	3,526,288	0.6
9/24/04	1,744,090	3,529,123	0.3
10/1/04	1,744,238	3,529,271	0
10/4/04	1,744,264	3,529,297	0 ¹⁰
10/5/04	1,746,297	3,531,330	1.4
10/8/04	1,749,826	3,534,859	0.8
10/11/04	1,752,815	3,537,848	0.7
10/22/04	1,754,363	3,563,352	1.6 ¹¹
10/29/04	1,756,580	3,579,480	1.6 ¹¹
11/4/04	622	3,593,416	1.6 ^{11, 12}
11/5/04	2,534	3,595,328	1.4
11/12/04	16,804	3,609,598	1.4
12/6/04	64,735	3,657,529	1.4
12/17/04	87,937	3,680,731	2.0
12/23/04	106,802	3,699,596	1.4
12/30/04	130,647	3,723,441	2.4
1/5/05	156,935	3,749,729	3.13
1/6/05	163,038	3,755,832	3.39
1/14/05	188,997	3,781,791	2.27
1/28/05	206,004	3,798,798	0.84
2/7/05	257,671	3,850,465	3.61
2/14/05	275,063	3,867,857	1.70
3/4/05	347,248	3,940,042	2.78
3/10/05	378,996	3,971,790	3.73
3/21/05	425,475	4,018,269	2.96
4/1/05	471,716	4,064,510	2.90

Table 3. Groundwater Extraction System Totalizer Readings - Redwood Oil Company Bulk Plant, 455 Yolanda, Santa Rosa, California

Date	Totalizer Reading (gal)	Total Discharged (gallons)	Average Flow Rate Since Previous Reading (gal/min)
4/6/05	486,288	4,079,082	2.02
4/8/05	497,476	4,090,270	3.88
4/15/05	527,243	4,120,037	2.95
4/22/05	553,539	4,146,333	2.61
5/2/05	602,308	4,195,102	3.39
5/6/05	613,012	4,205,806	1.86
5/16/05	651,533	4,244,327	2.50
7/5/05	651,533	4,244,327	0.00
7/22/05	739,986	4,332,780	3.61
7/29/05	773,192	4,365,986	3.29
8/5/05	801,337	4,394,131	2.79
8/12/05	827,552	4,420,346	2.60
8/19/05	852,397	4,445,191	2.46
8/21/05	855,601	4,448,395	1.11
8/26/05	875,312	4,468,106	2.73
9/2/05	892,192	4,484,986	1.67
9/9/05	908,580	4,501,374	1.62
9/19/05	923,094	4,515,888	1.01
9/23/05	936,118	4,528,912	2.26
10/5/05	953,125	4,545,919	0.98

NOTES:

¹ 8/17/01 meter reading is incorrect due to system malfunction.

² Discharge for period between 8/17/01 and 8/20/01 is calculated at 1 gallon per minute.

³ System inoperative between 8/17/01 and 8/20/01.

⁴ New flow totalizer installed 11/5/01 at 1:00 PM.

⁵ System inoperative between 1/02/02 and 1/10/02 for carbon vessel recharge and carbon vessel repair.

⁶ System inoperative between 6/7/02 and 6/13/02 due to compressor failure.

⁷ Totalizer malfunctioned and reset to zero on 10/18/02.

⁸ System inoperative between 5/3/04 and 5/4/04 due to compressor malfunction.

Table 3. Groundwater Extraction System Totalizer Readings - Redwood Oil Company Bulk Plant, 455 Yolanda, Santa Rosa, California

⁹ System operating but totalizer inoperative between 8/6/04 and 8/26/04. Average flow rate for the quarter was used to estimate actual flow rate.

¹⁰ System inoperative between 10/1/04 and 10/4/04.

¹¹ System operating but totalizer inoperative. Average flow rate for the quarter was used to estimate actual flow rate.

¹² New flow totalizer installed 11/4/04. Readings begin at 622 gallons.

Table 4. Influent Analytical Results - Redwood Oil Company Bulk Plant, 455 Yolanda, Santa Rosa, California

Sample ID	Date	TPPH(G)	TPH(D)	Benzene	Toluene	Ethyl Benzene	Xylenes	MTBE
		<-----PPB----->						
Influent	2/2/01 ¹	-----	-----	310	56	84	130	-----
Influent	2/8/01 ¹	9,300	<50	-----	-----	-----	-----	38,000
Influent	5/17/01	6,500	<50	1.3	3.2	2.2	7.3	-----
Influent	5/21/01	2,500	210	<12.5	<12.5	<12.5	<12.5	4,200 ²
Influent A	8/13/01	12,000	1900	490	400	95	1000	8,200 ³
Influent B	8/13/01	1,500	1200	130	7.7	5.1	55	1,900 ⁴
Influent A	8/23/01	1,600	1400	170	6.1	4.1	26	2,200 ⁵
Influent B	8/23/01	2,000	1800	72	18	<2.5	83	6,500 ⁶
Influent A	11/20/01	1,900	720	48	16	<5	93	4,500 ⁷
Influent B	11/20/01	2,700	1,500	52	53	<25	140	3,700 ⁸
Influent A	2/14/02	570	1,800	50	6.1	28	78	310 ⁹
Influent B	2/14/02	74	110	1.4	7.9	<0.50	6.9	3,600 ¹⁰
Influent A	5/6/02	84	160	4.9	0.58	1.6	3.9	690 ²
Influent B	5/6/02	940	1,300	<5	220	14	111	1,600 ²
Influent A	8/8/02	530	300	11	7.6	2.5	18	420 ²
Influent B	8/8/02	460	970	5.9	3.6	1.1	10	690 ²

Table 4. Influent Analytical Results - Redwood Oil Company Bulk Plant, 455 Yolanda, Santa Rosa, California

Sample ID	Date	TPPH(G)	TPH(D)	Benzene	Toluene	Ethyl Benzene	Xylenes	MTBE
		<-----PPB----->						
Influent A	11/05/02	730	380	<0.5	<0.5	<0.5	<1	3,700 ¹¹
Influent B	11/05/02	84	580	7.8	4.4	<2.5	23	780 ²
Influent A	2/18/03	360	240	5.6	<0.5	0.71	1.5	4,300 ²
Influent B	2/18/03	1,300	<63	<2.5	<2.5	<2.5	<2.5	1,900 ²
Influent A	5/14/03	120	530	1.4	<1	<1	<1	1,100 ¹²
Influent B	5/14/03	440	200	4.9	2.2	1.3	8.5	1,200 ²
Influent A	8/14/03	220	230	2.0	<0.5	0.69	3.1	360 ¹³
Influent B	8/14/03	210	330	6.6	<0.5	0.62	<1	280 ¹³
Influent	12/22/03	160	630	13	<0.5	<0.5	1.3	110 ¹⁴
Influent	3/16/04	240	250	7.0	0.52	<1	4.5	390
Influent	5/11/04	540	<50	<5	<5	<5	<5	760
Influent	7/22/04	410	<50	8.4	<5	<5	<5	600
Influent	10/4/04	200	1,800	30	<2.5	<2.5	<5	190
Influent	1/5/05	<50	<50 ¹⁵	10	<2.5	<2.5	6.7	530
Influent	4/6/05	260	190	<2.5	<2.5	<2.5	<2.5	370
Influent	7/6/05	270	350	12	<2.5	<2.5	2.7	360

Table 4. Influent Analytical Results - Redwood Oil Company Bulk Plant, 455 Yolanda, Santa Rosa, California

Explanation:

TPPH(G)	=	total purgeable petroleum hydrocarbons as gasoline
TPH(D)	=	total purgeable petroleum hydrocarbons as diesel
MTBE	=	methyl tertiary butyl ether
ppb	=	part per billion
TBA	=	tertiary butanol
TAME	=	tertiary amyl methyl ether

NOTES:

¹ Samples dated 2/2/01 and 2/8/01 collected by Earth Engineers. 2/8/01 sample was analyzed for VOCs by EPA Method 8260. Consult analytical laboratory results for other analytes detected.

² Other oxygenates not detected.

³ TAME and TBA also detected at 190 and 2,600 ppb respectively. Other oxygenates not detected.

⁴ TBA also detected at 950 ppb. Other oxygenates not detected.

⁵ TBA also detected at 810 ppb. Other oxygenates not detected.

⁶ TBA also detected at 1,600 ppb. Other oxygenates not detected.

⁷ TBA also detected at 640 ppb. Other oxygenates not detected.

⁸ TBA also detected at 810 ppb. Other oxygenates not detected.

⁹ TAME and 1,2 Dichloroethane also detected at 5.7 and 2.8 ppb respectively. Other oxygenates not detected.

¹⁰ TAME also detected at 66 ppb. Other oxygenates not detected.

¹¹ TBA also detected at 760 ppb. Other oxygenates not detected.

¹² TBA also detected at 350 ppb. Other oxygenates not detected.

¹³ TBA detected in Influent A and Influent B at 80 and 93 ppb respectively. Other oxygenates not detected.

¹⁴ TBA detected in Influent sample at 44 ppb. Other oxygenates not detected.

¹⁵ 430 ppb light Oil is in the sample (C12-C36). No Diesel pattern.

Table 5: Water Levels in Pumping Wells - Redwood Oil Company Bulk Plant, 455 Yolanda, Santa Rosa, CA

Date	PMCS #1	PMCS #2	PMCS #3	PMCS #4	PMCS #5	PMCS #6	GWE/ SVE #1	GWE/ SVE #2	GWE/ SVE #3	GWE/ SVE #4	GWE/ SVE #5	GWE/ SVE #6	GWE/ SVE #7	GWE/S VE #8	GWE/S VE #9	GWE #10
	<-----Depth to Water (Ft)----->															
2/15/01	33.9	28.2	26.3	26.1	26.0	25.35	-	-	-	-	-	-	-	-	-	-
5/16/01	15.16	15.31	16.05	16.24	14.72	13.32	-	-	-	-	-	-	-	-	-	-
5/17/01	-	23.53	26.15	22.75	24.88	24.87	-	-	-	-	-	-	-	-	-	-
5/21/01	-	23.52	26.15	24.82	24.91	24.90	-	-	-	-	-	-	-	-	-	-
6/18/01	-	23.5	26.12	24.83	24.92	24.90	-	-	-	-	-	-	-	-	-	-
7/5/01	-	-	-	-	-	-	24.15	24.50	20.55	24.01	24.21	23.48	25.22	23.19	22.84	15.51
7/27/01	24.62	23.53	26.08	24.80	24.88	24.87	24.08	29.40	20.42	23.90	24.10	23.41	25.09	23.10	23.01	15.45
8/14/01	-	23.51	26.11	22.89	24.89	24.90	22.30	28.75	22.2	23.81	-	-	-	-	-	-
8/17/01	24.80	23.62	26.12	24.79	24.90	24.92	-	-	-	-	-	-	-	-	-	-
9/18/01	-	23.49	26.12	24.81	24.92	24.92	23.96	29.51	20.53	23.90	24.10	23.46	25.11	23.18	23.01	15.81
9/27/01	-	23.51	26.10	24.10	25.42	25.40	-	-	-	-	-	-	-	-	-	-
10/11/01	-	-	-	-	-	-	24.02	29.41	20.52	23.90	24.12	23.46	25.14	23.18	22.91	15.45
11/2/01	24.80	23.50	26.10	25.40	25.40	25.45	24.05	29.45	20.50	23.95	24.15	23.40	25.14	23.15	22.96	15.40
12/4/01	24.62	23.60	26.00	25.70	25.80	25.70	24.03	29.40	20.40	23.80	24.15	23.30	25.30	23.20	22.90	15.50
2/28/02	---	23.5	26.0	22.5	25.0	25.0	24.0	22.0	22.6	24.0	23.3	23.3	24.0	23.0	23.0	15.0
5/8/02	---	23.51	26.42	23.10	24.86	23.70	23.97	14.65	22.05	23.80	24.15	23.34	22.19	22.27	11.85	12.16
8/1/02	24.60	23.65	30.60	30.35	25.40	24.80	24.00	29.40	22.50	23.90	24.10	23.35	23.95	23.07	22.9	15.36
8/21/02	24.60	23.65	30.60	30.35	25.40	24.80	24.00	29.40	22.50	23.90	24.10	23.35	23.95	23.07	22.9	15.36

Table 5: Water Levels in Pumping Wells - Redwood Oil Company Bulk Plant, 455 Yolanda, Santa Rosa, CA

Date	PMCS #1	PMCS #2	PMCS #3	PMCS #4	PMCS #5	PMCS #6	GWE/ SVE #1	GWE/ SVE #2	GWE/ SVE #3	GWE/ SVE #4	GWE/ SVE #5	GWE/ SVE #6	GWE/ SVE #7	GWE/S VE #8	GWE/S VE #9	GWE #10
	<-----Depth to Water (Ft)----->															
11/1/02	24.60	23.65	30.60	30.35	25.40	24.80	24.00	29.40	22.50	23.90	24.10	23.35	23.95	23.07	22.9	15.36
1/29/02	24.60	23.65	30.60	30.35	25.40	24.80	24.00	29.40	22.50	23.90	24.10	23.35	23.95	23.07	22.9	15.36
4/25/03	24.60	23.65	30.60	30.35	25.40	24.80	24.00	29.40	22.50	23.90	24.10	23.35	23.95	23.07	22.9	15.36
7/25/03	24.60	23.65	30.60	30.35	25.40	24.80	24.00	29.40	22.50	23.90	24.10	23.35	23.95	23.07	22.9	15.36
3/16/04	24.60	23.65	30.60	30.35	25.40	24.80	24.00	29.40	22.50	23.90	24.10	23.35	23.95	23.07	22.9	15.36
10/8/04	---	23.50	28.06	17.83	---	24.56	23.95	29.35	22.50	23.30	24.10	23.30	25.25	23.02	22.85	---
4/22/05	26.30	23.44	25.95	12.19	24.72	18.61	10.55	29.50	10.51	8.80	24.23	12.45	22.76	23.15	22.90	---
9/9/05	---	26.02	14.12	23.44	24.78	24.40	---	---	22.62	---	---	23.45	25.30	23.15	---	15.50

Note: If water level in pumping well is below Top of Pump, measurement is to Top of Pump only.

Note: System inoperative from 4/30/01 to 5/16/01. PMCS wells reactivated 5/16/01.

Note: Water levels shown in table increased by 1 ft from water levels measured in field due to depth of casing in well boxes.

Main GWE system reactivated 6/15/01.

Table 6. Sparge Point Flow Rates - Redwood Oil Company Bulk Plant, 455 Yolanda, Santa Rosa, California

DATE	AS #1	AS #2	AS #3	AS #4	AS #5	AS #6	AS #7	AS #8	AS #9	AS #10	AS #11	AS #12	AS #13	AS #14
	<-----Flow Rate (Standard Cubic Feet Per Minute)----->													
7/5/01	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2
7/23/01	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2
7/27/01	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2
8/1/01	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2
8/10/01	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2
8/28/01	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2
9/10/01	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2
9/27/01	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2
10/4/01	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2
10/9/01	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2
10/16/01	≤2	≤2	≤2	≤2	≤2	4	≤2	4	≤2	10	4	≤2	≤2	≤2
10/25/01	≤2	≤2	6	3	5	6	3	4	4	7	10	8	4	8
11/2/01	5	---	6	6	6	7	2	5	5	7	6	6	6	6
11/20/01	5	---	7	6	6	7	2	7	7	5	6	6	7	6
12/12/01	5	---	7	4	6	9	2	6	7	6	9	7	8	7
2/7/02	5	---	5	5	7	8	3	5	6	5	6	5	6	5
2/21/02	8	---	5	5	5	4	6	4	8	6	8	5	8	8
3/5/02	8	---	5	5	4	5	5	5	8	5	8	5	8	8
3/14/02	8	---	5	5	5	4	6	4	8	6	8	5	8	8

Table 6. Sparge Point Flow Rates - Redwood Oil Company Bulk Plant, 455 Yolanda, Santa Rosa, California

[illegible]

Table 6. Sparge Point Flow Rates - Redwood Oil Company Bulk Plant, 455 Yolanda, Santa Rosa, California

5/8/03	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	5	0 - 2	0 - 2	4
7/11/03	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2
8/29/03	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2
DATE	Operating Air Sparge Points					Flow per AS Point (CFM)		Total Flow (CFM)		Operating Hours		Notes		
9/12/03	AS #1 - AS #14					0 - 1		0 - 14				all points set to 1cfm or less		
9/26/03	AS #1 - AS #14					0 - 1		0 - 14		335				
10/3/03	AS #1 - AS #14					0 - 1		0 - 14		166				
10/10/03	AS #1 - AS #14					0 - 1		0 - 14		168				
10/17/03	AS #1 - AS #14					0 - 1		0 - 14		158				
10/24/03	AS #1 - AS #14					0 - 1		0 - 14		168				
10/31/03	AS #1 - AS #14					0 - 1		0 - 14		167				
11/19/03	AS #1 - AS #14					0 - 1		0 - 14		456				
12/22/03	AS #1 - AS #14					0 - 1		0 - 14		609				
1/7/04	AS #1 - AS #14					0 - 1		0 - 14		---		flow meter inoperative		
1/14/04	AS #1 - AS #14					0 - 1		0 - 14		---		flow meter inoperative		
1/29/04	AS #1 - AS #14					0 - 1		0 - 14		0				
2/13/04	AS #1 - AS #14					0 - 1		0 - 14		719				
2/27/04	AS #1 - AS #14					0 - 1		0 - 14		332				
3/3/04	AS #1 - AS #14					0 - 1		0 - 14		124				

Table 6. Sparge Point Flow Rates - Redwood Oil Company Bulk Plant, 455 Yolanda, Santa Rosa, California

DATE	Operating Air Sparge Points	Flow per AS Point (CFM)	Total Flow (CFM)	Operating Hours	Notes
3/10/04	AS #1 - AS #14	0 - 1	0 - 14	0	
3/16/04	AS #1 - AS #14	0 - 1	0 - 14	0	
3/25/04	AS #1 - AS #14	0 - 1	0 - 14	0	
3/31/04	AS #1 - AS #14	0 - 1	0 - 14	0	
4/9/04	AS #1 - AS #14	0 - 1	0 - 14	0	
5/4/04	AS #1 - AS #14	0 - 1	0 - 14	---	flow meter inoperative
6/4/04	AS #1 - AS #14	0 - 1	0 - 14	746	
7/9/04	AS #1 - AS #14	0 - 1	0 - 14	---	flow meter inoperative
8/2/04	AS #1 - AS #14	0 - 1	0 - 14	739	
8/26/04	AS #1 - AS #14	0 - 1	0 - 14	547	
12/30/04	AS #1 - AS #14	0 - 1	0 - 14	2643	readings switched to quarterly
3/21/05	AS #1 - AS #14	0 - 1	0 - 14	1508	
4/24/05	AS #1 - AS #14	0 - 1	0 - 14	699	system deactivated

Notes: Two standard cubic feet per minute is the lowest reading available on flow meter

¹ AS system inoperative between 8/16/02 and 9/9/02 during cyclic shutdown of SVE system

² System functioning but flow meters inoperative

Table 7. Water Level Data/Well Construction Details - Redwood Oil Bulk Plant, 455 Yolanda Ave. Santa Rosa, CA

Well ID	Sample Date	TOC (Ft, msl)	DTW (Ft)	GWE (Ft, msl)	Product (ft)	Screen Interval	Sand Pack Interval	Bentonite/ Grout Interval	Notes
MW-1	01/11/91	---	102.77	---	--	9 - 24	7 - 24	0 - 7	
	02/08/91	---		---	---				
	03/08/91	---		---	---				
	06/13/91	22.02		80.75	0.00				
	07/09/91	22.22		80.55	0.00				
	08/01/91	22.00		80.77	0.00				
	08/29/91	21.73		81.04	0.00				
	09/11/91	21.75		81.02	0.00				
	10/08/91	22.04		80.73	0.00				
	11/08/91	22.23		80.54	0.00				
	12/11/91	---		---	0.00				
	01/13/92	21.41		81.36	0.00				
	02/11/92	20.25		82.52	0.00				
	03/11/92	12.79		89.98	0.00				
	04/13/92	13.76		89.01	0.00				
	05/15/92	15.49		87.28	0.00				
	06/15/92	16.85		85.92	0.00				
	07/16/92	17.74		85.03	0.00				
	08/18/92	17.56		85.21	0.00				
	09/18/92	18.62		84.15	0.00				
	12/08/92	18.38		84.39	0.00				
	03/10/93	13.29		89.48	0.00				
	06/04/93	12.77		90.00	0.00				
	10/14/93	23.66		79.11	0.00				
	04/11/94	14.58		88.19	0.00				
	10/19/94	14.51		88.26	0.00				
	04/11/95	9.18		93.59	0.00				
	03/06/96	10.16		92.61	0.00				
	10/14/96	12.36	102.78	90.42	0.00				Top of casing elevations re-surveyed.
	04/09/97	10.75		92.03	0.00				
	10/29/97	13.28		89.50	0.00				
	04/07/98	8.06		94.72	0.00				
	10/07/98	11.51		91.27	0.00				
	04/07/99	8.71		94.07	0.00				

Table 7. Water Level Data/Well Construction Details - Redwood Oil Bulk Plant, 455 Yolanda Ave. Santa Rosa, CA

Well ID	Sample Date	TOC (Ft, msl)	DTW (Ft)	GWE (Ft, msl)	Product (ft)	Screen Interval	Sand Pack Interval	Bentonite/ Grout Interval	Notes
MW-1	10/19/99	11.98	102.78	90.80	0.00	9 - 24	7 - 24	0 - 7	
	04/26/00	---		---	0.00				Well inaccessible due to construction activities.
	10/30/00	11.41	146.16	134.75	0.00				Top of casing elevations re-surveyed.
	02/01/01	11.28		134.88	0.00				
	04/23/01	14.29		131.87	0.00				
	07/23/01	14.88		131.28	0.00				
	10/23/01	16.46		129.70	0.00				
	01/21/02	12.77	148.81	136.04	0.00				Top of casing elevations were surveyed for EDF compliance.
	04/25/02	12.80		136.01	0.00				
	07/22/02	13.20		135.61	0.00				
	10/22/02	13.76		135.05	0.00				
	01/27/03	13.00		135.81	0.00				
	04/21/03	12.85		135.96	0.00				
	07/21/03	13.36		135.45	0.00				
	01/20/04	10.04		138.77	0.00				
	07/19/04	13.04		135.77	0.00				
	01/18/05	9.96		138.85	0.00				
	07/12/05	9.40		139.41	0.00				
	09/09/05	10.39		138.42	0.00				
MW-2	01/11/91	21.36	102.18	80.82	0.00	10 - 25	7.5 - 25	0 - 7.5	
	02/08/91	18.24		83.94	0.00				
	03/08/91	16.52		85.66	0.00				
	06/13/91	20.95		81.23	0.00				
	07/09/91	20.98		81.20	0.00				
	08/01/91	20.98		81.20	0.00				
	08/29/91	21.28		80.90	0.00				
	09/11/91	21.36		80.82	0.00				
	10/08/91	21.83		80.25	0.22				
	11/08/91	20.56		81.62	0.00				
	12/11/91	21.08		81.10	0.00				
	01/13/92	18.56		83.62	0.00				
	02/11/92	14.30		87.88	0.00				

Table 7. Water Level Data/Well Construction Details - Redwood Oil Bulk Plant, 455 Yolanda Ave. Santa Rosa, CA

Well ID	Sample Date	TOC (Ft, msl)	DTW (Ft)	GWE (Ft, msl)	Product (ft)	Screen Interval	Sand Pack Interval	Bentonite/ Grout Interval	Notes
MW-2	03/11/92	11.81	102.18	90.37	0.00	10 - 25	7.5 - 25	0 - 7.5	
	04/13/92	13.23		88.95	0.00				
	05/15/92	15.09		87.09	0.00				
	06/15/92	16.95		85.23	0.00				
	07/16/92	17.96		84.22	0.00				
	08/18/92	17.76		84.42	0.00				
	09/18/92	18.75		83.43	0.00				
	12/08/92	14.66		87.52	0.00				
	03/10/93	12.80		89.38	0.00				
	06/04/93	13.25		88.93	0.00				
	10/14/93	16.20		85.98	0.00				
	04/11/94	14.85		87.33	0.00				
	10/19/94	15.04		87.14	0.00				
	04/11/95	9.77		92.41	0.00				
	03/06/96	10.12		92.06	0.00				
	10/14/96	12.45		89.74	0.00				
	04/10/97	10.79		91.40	0.00				
	10/28/97	13.32		88.87	0.00				
	04/07/98	8.02		94.17	0.00				
	10/07/98	11.64		90.55	0.00				
	04/07/99	8.79		93.40	0.00				
	10/19/99	12.05		90.14	0.00				
	04/26/00	---		---	---				Well inaccessible due to construction activities.
	10/30/00	10.80	145.32	134.52	0.00				Top of casing elevations re-surveyed.
	02/01/01	10.70		134.62	0.00				
	04/23/01	13.74		131.58	0.00				
	07/23/01	14.22		131.10	0.00				
	10/23/01	16.04		129.28	0.00				
	01/21/02	13.36		134.61	0.00				
	04/25/02	13.80		134.17	0.00				
	07/22/02	13.81		134.16	0.00				
	10/22/02	13.82		134.15	0.00				
	01/27/03	13.18	147.97	134.79	0.00				Top of casing elevations were surveyed for EDF compliance.

Table 7. Water Level Data/Well Construction Details - Redwood Oil Bulk Plant, 455 Yolanda Ave. Santa Rosa, CA

Well ID	Sample Date	TOC (Ft, msl)	DTW (Ft)	GWE (Ft, msl)	Product (ft)	Screen Interval	Sand Pack Interval	Bentonite/ Grout Interval	Notes
MW-2	04/21/03	12.34	147.97	135.63	0.00	10 - 25	7.5 - 25	0 - 7.5	
	07/21/03	13.01		134.96	0.00				
	01/20/04	11.81		136.16	0.00				
	07/19/04	12.84		135.13	0.00				
	01/18/05	11.14		136.83	0.00				
	07/12/05	11.02		136.95	0.00				
	09/09/05	11.92		136.05	0.00				
MW-3	01/11/91	---	101.94	---	---	18 - 33	17 - 33	0 - 17	
	02/08/91	---		---	---				
	03/08/91	28.28		73.66	0.00				
	06/13/91	---		---	---				
	07/09/91	---		---	---				
	08/01/91	---		---	---				
	08/29/91	---		---	---				
	09/11/91	---		---	---				
	10/08/91	---		---	---				
	11/08/91	---		---	---				
	12/11/91	---		---	---				
	01/13/92	---		---	---				
	02/11/92	18.82		83.12	0.00				
	03/11/92	11.76		90.18	0.00				
	04/13/92	12.25		89.69	0.00				
	05/15/92	15.35		86.59	0.00				
	06/15/92	17.61		84.33	0.00				
	07/16/92	19.86		82.08	0.00				
	08/18/92	19.66		82.28	0.00				
	10/18/92	26.00		75.94	0.00				
	12/08/92	17.24		84.70	0.00				
	03/10/93	14.60		87.34	0.00				
	06/04/93	13.95		87.99	0.00				
	10/14/93	---		---	---				
	04/11/94	16.58		85.36	0.00				
	10/19/94	16.01		85.93	0.00				

Table 7. Water Level Data/Well Construction Details - Redwood Oil Bulk Plant, 455 Yolanda Ave. Santa Rosa, CA

Well ID	Sample Date	TOC (Ft, msl)	DTW (Ft)	GWE (Ft, msl)	Product (ft)	Screen Interval	Sand Pack Interval	Bentonite/ Grout Interval	Notes
MW-3	04/11/95	11.12	101.94	90.82	0.00	18 - 33	17 - 33	0 - 17	
	03/06/96	11.72		90.22	0.00				
	10/14/96	13.94	101.97	88.03	0.00				
	04/10/97	12.08		89.90	0.01				
	10/29/97	16.02		85.99	0.02				
	04/07/98	9.97		92.00	0.00				
	10/07/98	12.66		89.31	0.00				
	04/07/99	9.70		92.27	0.00				
	10/19/99	13.15		88.82	0.00				
	04/26/00	---		---	---				Well inaccessible due to construction activities.
	10/30/00	---	145.10	---	---				Well plugged at seven feet, no water.
	02/01/01	12.33		132.77	0.00				
	04/23/01	---		---	---				Well was inaccessible
	07/23/01	14.98		130.12	0.00				
	10/23/01	17.00		128.10	0.00				
	01/21/02	13.67	147.75	134.08	0.00				Top of casing elevations were surveyed for EDF compliance.
	04/25/02	14.50		133.25	0.00				
	07/22/02	14.96		132.79	0.00				
	10/22/02	15.22		132.53	0.00				
	01/27/03	14.21		133.54	0.00				
	04/21/03	13.47		134.28	0.00				
	07/21/03	14.43		133.32	0.00				
	01/20/04	12.00		135.75	0.00				
	07/19/04	14.03		133.72	0.00				
	01/18/05	11.11		136.64	0.00				
	07/12/05	11.68		136.07	0.00				
MW-4	01/11/91	---	101.47	---	---	10 - 25	7 - 25	0 - 7	
	02/08/91	---		---	---				
	03/08/91	---		---	---				
	06/13/91	---		---	---				
	07/09/91	---		---	---				
	08/01/91	---		---	---				

Table 7. Water Level Data/Well Construction Details - Redwood Oil Bulk Plant, 455 Yolanda Ave. Santa Rosa, CA

Well ID	Sample Date	TOC (Ft, msl)	DTW (Ft)	GWE (Ft, msl)	Product (ft)	Screen Interval	Sand Pack Interval	Bentonite/ Grout Interval	Notes
MW-4	08/29/91	---	101.47	---	---	10 - 25	7 - 25	0 - 7	
	09/11/91	---		---	---				
	10/08/91	---		---	---				
	11/08/91	---		---	---				
	12/11/91	---		---	---				
	01/13/92	24.47		77.00	0.00				
	02/11/92	26.06		75.41	0.00				
	03/11/92	23.46		78.01	0.00				
	04/13/92	24.25		77.22	0.00				
	05/15/92	---			---				
	06/15/92	---			---				
	07/16/92	---		---	---				
	08/18/92	---		---	---				
	09/18/92	---		---	---				
	12/08/92	---		---	---				
	03/10/93	---		---	---				
	06/04/93	---		---	---				
	10/14/93	---		---	---				
	04/11/94	---		---	---				
	10/19/94	---		---	---				
	04/11/95	---		---	---				
	03/06/96	16.52		84.95	0.00				
	10/14/96	20.39	101.70	81.31	0.00				
	04/10/97	16.02		85.68	0.00				
	10/29/97	21.61		80.09	0.00				
	04/07/98	11.30		90.40	0.00				
	10/07/98	15.53		86.17	0.00				
	04/07/99	11.95		89.75	0.00				
	10/19/99	15.15		86.55	0.00				
	04/26/00	10.38		91.32	0.00				
	06/01/00	---		---	---				
	10/30/00	13.78	145.47	131.69	0.00				Top of casing elevations were surveyed.
	02/01/01	13.41		132.06	0.00				
	04/23/01	19.27		126.20	0.00				

Table 7. Water Level Data/Well Construction Details - Redwood Oil Bulk Plant, 455 Yolanda Ave. Santa Rosa, CA

Well ID	Sample Date	TOC (Ft, msl)	DTW (Ft)	GWE (Ft, msl)	Product (ft)	Screen Interval	Sand Pack Interval	Bentonite/ Grout Interval	Notes
MW-4	07/23/01	17.65	145.47	127.82	0.00	10 - 25	7 - 25	0 - 7	
	10/23/01	19.88		125.59	0.00				
	01/21/02	13.62	148.12	134.50	0.00				Top of casing elevations were surveyed for EDF compliance.
	04/25/02	14.47		133.65	0.00				
	07/22/02	15.57		132.55	0.00				
	10/22/02	17.23		130.89	0.00				
	01/27/03	13.00		135.12	0.00				
	04/21/03	13.42		134.70	0.00				
	07/21/03	14.15		133.97	0.00				
	01/20/04	11.67		136.45	0.00				
	07/19/04	14.47		133.65	0.00				
	01/18/05	11.31		136.81	0.00				
	07/12/05	11.53		136.59	0.00				
MW-5	06/13/91	25.84	101.37	75.53	0.00	34.5 - 44.5	32.5 - 44.5	0 - 32.5	
	07/09/91	25.98		75.39	0.00				
	08/01/91	23.22		78.15	0.00				
	08/29/91	22.79		78.58	0.00				
	09/11/91	22.58		78.79	0.00				
	10/08/91	27.46		73.91	0.00				
	11/08/91	24.36		77.01	0.00				
	12/11/91	23.35		78.02	0.00				
	01/13/92	23.96		77.41	0.00				
	02/11/92	23.67		77.70	0.00				
	03/11/92	22.01		79.36	0.00				
	04/13/92	21.50		79.87	0.00				
	05/15/92	18.96		82.41	0.00				
	06/15/92	18.72		82.65	0.00				
	07/16/92	19.88		81.49	0.00				
	08/18/92	19.38		81.99	0.00				
	09/18/92	19.60		81.77	0.00				
	12/08/92	20.04		81.33	0.00				
	03/10/93	16.60		84.77	0.00				

Table 7. Water Level Data/Well Construction Details - Redwood Oil Bulk Plant, 455 Yolanda Ave. Santa Rosa, CA

Well ID	Sample Date	TOC (Ft, msl)	DTW (Ft)	GWE (Ft, msl)	Product (ft)	Screen Interval	Sand Pack Interval	Bentonite/ Grout Interval	Notes
MW-5	06/04/93	15.96	101.37	85.41	0.00	34.5 - 44.5	32.5 - 44.5	0 - 32.5	
	10/14/93	18.68		82.69	0.00				
	04/11/94	14.46		86.91	0.00				
	10/19/94	15.56		85.81	0.00				
	04/11/95	9.52		91.85	0.00				
	03/06/96	10.60		90.77	0.00				
	10/14/96	11.81		89.53	0.00				
	04/09/97	10.08		91.26	0.00				
	10/29/97	15.05		86.29	0.00				
	04/07/98	8.01		93.33	0.00				
	10/07/98	9.82		91.52	0.00				
	04/07/99	9.12		92.22	0.00				
	10/19/99	12.96		88.38	0.00				
	04/26/00	9.28		92.06	0.00				
	10/30/00	---	145.73	---	---				Well inaccessible due to area flooding
	02/01/01	11.52		134.21	0.00				
	04/23/01	15.25		130.48	0.00				
	07/23/01	13.22		132.51	0.00				
	10/23/01	13.15		132.58	0.00				
	01/21/02	12.50	148.38	135.88	0.00				Top of casing elevations were surveyed for EDF compliance.
	04/25/02	12.02		136.36	0.00				
	07/22/02	11.00		137.38	0.00				
	10/22/02	11.40		136.98	0.00				
	01/27/03	10.78		137.60	0.00				
	04/21/03	9.15		139.23	0.00				
	01/20/04	8.00		140.38	0.00				
	07/19/04	10.53		137.85	0.00				
	01/18/05	10.09		138.29	0.00				
	07/12/05	7.11		141.27	0.00				

Table 7. Water Level Data/Well Construction Details - Redwood Oil Bulk Plant, 455 Yolanda Ave. Santa Rosa, CA

Well ID	Sample Date	TOC (Ft, msl)	DTW (Ft)	GWE (Ft, msl)	Product (ft)	Screen Interval	Sand Pack Interval	Bentonite/ Grout Interval	Notes
MW-5A	10/14/96	11.80	101.37	89.57	0.00	50 - 60	49 - 60	0 - 49	
	04/10/97	10.16		91.21	0.00				
	10/29/97	16.80		84.57	0.00				
	04/07/98	9.64		91.73	0.00				
	10/07/98	10.09		91.28	0.00				
	04/07/99	7.55		93.82	0.00				
	10/19/99	---		---	---				Well casing was damaged.
	04/26/00	7.58	101.37	93.79	0.00				
	10/30/00	---	145.70	---	---				Well inaccessible due to area flooding
	02/01/01	11.17		134.53	0.00				
	04/23/01	11.75		133.95	0.00				
	07/23/01	12.58		133.12	0.00				
	10/23/01	13.71		131.99	0.00				
	01/21/02	12.55	148.35	135.80	0.00				Top of casing elevations were surveyed for EDF compliance.
	04/25/02	11.45		136.90	0.00				
	07/22/02	10.75		137.60	0.00				
	10/22/02	10.90		137.45	0.00				
	01/27/03	10.31		138.04	0.00				
	04/21/03	10.35		138.00	0.00				
	07/19/04	10.03		138.32	0.00				
	01/18/05	10.15		138.20	0.00				
	07/12/05	8.42		139.93	0.00				
MW-7	06/13/91	34.93	100.86	65.93	0.00	51 - 60	49 - 60	0 - 49	
	07/09/91	35.05		65.81	0.00				
	08/01/91	35.76		65.10	0.00				
	08/29/91	37.28		63.58	0.00				
	09/11/91	36.71		64.15	0.00				
	10/08/91	36.59		64.27	0.00				
	11/08/91	36.31		64.55	0.00				
	12/11/91	36.55		63.31	0.00				
	01/13/92	37.03		63.83	0.00				
	02/11/92	36.20		64.66	0.00				

Table 7. Water Level Data/Well Construction Details - Redwood Oil Bulk Plant, 455 Yolanda Ave. Santa Rosa, CA

Well ID	Sample Date	TOC (Ft, msl)	DTW (Ft)	GWE (Ft, msl)	Product (ft)	Screen Interval	Sand Pack Interval	Bentonite/ Grout Interval	Notes
MW-7	03/11/92	34.51	100.86	66.35	0.00	51 - 60	49 - 60	0 - 49	
	04/13/92	33.85		67.01	0.00				
	05/15/92	33.04		67.82	0.00				
	06/15/92	35.53		65.33	0.00				
	07/16/92	35.42		65.44	0.00				
	08/18/92	35.03		65.83	0.00				
	09/18/92	35.52		65.34	0.00				
	12/08/92	34.36		66.50	0.00				
	03/10/93	30.21		70.65	0.00				
	06/04/93	29.33		71.53	0.00				
	10/14/93	32.23		68.63	0.00				
	04/11/94	28.87		71.99	0.00				
	10/19/94	31.19		69.67	0.00				
	04/11/95	22.49		78.37	0.00				
	03/06/96	21.44		79.42	0.00				
	10/14/96	---	101.03	---	---				Top of casing elevations re-surveyed.
	04/09/97	20.67		80.36	0.00				
	10/29/97	24.71		76.32	0.00				
	04/07/98	16.96		84.07	0.00				
	10/07/98	19.46		81.57	0.00				
	04/07/99	15.27		85.76	0.00				
	10/19/99	18.79		82.24	0.00				
	04/26/00	13.45		87.58	0.00				
	10/30/00	17.01	144.72	127.71	0.00				Top of casing elevations re-surveyed.
	02/01/01	16.17		128.55	0.00				
	04/23/01	18.12		126.60	0.00				
	07/23/01	19.53		125.19	0.00				
	10/23/01	22.00		122.72	0.00				
	01/21/02	16.30	147.37	131.07	0.00				Top of casing elevations were resurveyed for EDF compliance.
	04/25/02	16.27		131.10	0.00				
	07/22/02	17.81		129.56	0.00				
	10/22/02	18.90		128.47	0.00				
	01/27/03	15.20		132.17	0.00				

Table 7. Water Level Data/Well Construction Details - Redwood Oil Bulk Plant, 455 Yolanda Ave. Santa Rosa, CA

Well ID	Sample Date	TOC (Ft, msl)	DTW (Ft)	GWE (Ft, msl)	Product (ft)	Screen Interval	Sand Pack Interval	Bentonite/ Grout Interval	Notes	
MW-7	04/21/03	14.92	147.37	132.45	0.00	51 - 60	49 - 60	0 - 49		
	07/21/03	16.27		131.10	0.00					
	01/20/04	14.37		133.00	0.00					
	07/19/04	17.90		129.47	0.00					
	01/18/05	12.07		135.30	0.00					
	07/12/05	13.00		134.37	0.00					
	09/09/05	14.86		132.51	0.00					
MW-8	06/13/91	32.68	101.53	68.85	0.00	49 - 59	47.5 - 59	0 - 47.5		
	07/09/91	32.81		68.72	0.00					
	08/01/91	33.26		68.27	0.00					
	08/29/91	34.06		67.47	0.00					
	09/11/91	34.70		66.83	0.00					
	10/08/91	37.63		63.90	0.00					
	11/08/91	35.73		65.80	0.00					
	12/11/91	34.99		66.54	0.00					
	01/13/92	34.34		67.19	0.00					
	02/11/92	34.54		66.99	0.00					
	03/11/92	32.42		69.11	0.00					
	04/13/92	30.46		71.07	0.00					
	05/15/92	30.80		70.73	0.00					
	06/15/92	31.82		69.71	0.00					
	07/16/92	33.01		68.52	0.00					
	08/18/92	32.90		68.63	0.00					
	09/18/92	33.60		67.93	0.00					
	12/08/92	33.07		68.46	0.00					
	03/10/93	26.87		74.66	0.00					
	06/04/93	25.39		76.14	0.00					
	10/14/93	29.90		71.63	0.00					
	04/11/94	26.70		74.83	0.00					
	10/19/94	15.56		85.97	0.00					
	04/11/95	19.87		81.66	0.00					
	03/06/96	19.03		82.50	0.00					
	10/14/96	22.90		101.42	78.52				0.00	Top of casing elevation re-surveyed.

Table 7. Water Level Data/Well Construction Details - Redwood Oil Bulk Plant, 455 Yolanda Ave. Santa Rosa, CA

Well ID	Sample Date	TOC (Ft, msl)	DTW (Ft)	GWE (Ft, msl)	Product (ft)	Screen Interval	Sand Pack Interval	Bentonite/ Grout Interval	Notes	
MW-8	04/10/97	19.06	101.42	82.36	0.00	49 - 59	47.5 - 59	0 - 47.5		
	10/29/97	23.91		77.51	0.00					
	04/07/98	15.15		86.27	0.00					
	10/07/98	19.02		82.40	0.00					
	04/07/99	14.39		87.03	0.00					
	10/19/99	19.40		82.02	0.00					
	04/26/00	13.78		87.64	0.00					
	10/30/00	17.90	144.85	126.95	0.00					Top of casing elevation re-surveyed.
	02/01/01	16.78		128.07	0.00					
	04/23/01	17.25		127.60	0.00					
	07/23/01	19.18	144.85	125.67	0.00					
	10/23/01	21.80		123.05	0.00					
	01/21/02	14.21	147.50	133.29	0.00					Top of casing elevations were surveyed for EDF compliance.
	04/25/02	15.82		131.68	0.00					
	07/22/02	15.50		132.00	0.00					
	10/22/02	18.70		128.80	0.00					
	01/27/03	14.85		132.65	0.00					
	04/21/03	14.80		132.70	0.00					
	07/21/03	16.30		131.20	0.00					
	01/20/04	14.31		133.19	0.00					
	07/19/04	15.65		131.85	0.00					
	01/18/05	12.65		134.85	0.00					
MW-9	10/14/96	16.40	100.29	83.89	0.00	8 - 26	7 - 26	0 - 7		
	04/10/97	12.98		87.31	0.00					
	10/29/97	16.06		84.23	0.00					
	04/07/98	10.31		89.98	0.00					
	10/07/98	14.48		85.81	0.00					
	04/07/99	10.90		89.39	0.00					
	10/19/99	14.65		82.08	0.00					
	04/26/00	11.51		88.78	0.00					
	10/30/00	14.42	144.66	130.24	0.00					Top of casing elevation surveyed.
	02/01/01	14.12		130.54	0.00					

Table 7. Water Level Data/Well Construction Details - Redwood Oil Bulk Plant, 455 Yolanda Ave. Santa Rosa, CA

Well ID	Sample Date	TOC (Ft, msl)	DTW (Ft)	GWE (Ft, msl)	Product (ft)	Screen Interval	Sand Pack Interval	Bentonite/ Grout Interval	Notes
MW-9	04/23/01	15.54	144.66	129.12	0.00	8 - 26	7 - 26	0 - 7	
	07/23/01	16.45		128.21	0.00				
	10/23/01	18.80		125.86	0.00				
	01/21/02	15.52	147.31	131.79	0.00				Top of casing elevations were surveyed for EDF compliance.
	04/25/02	14.64		132.67	0.00				
	07/22/02	17.55		129.76	0.00				
	10/22/02	16.00		131.31	0.00				
	01/27/03	13.64		133.67	0.00				
	04/21/03	13.75		133.56	0.00				
	07/21/03	14.60		132.71	0.00				
	01/20/04	13.12	147.31	134.19	0.00				
	07/19/04	14.36		132.95	0.00				
	01/18/05	11.76		135.55	0.00				
MW-10	04/10/99	12.04	102.04	0.00	0.00	5 - 20	4.5 - 20	0 - 4.5	
	10/19/99	13.33		0.00	0.00				
	04/26/00	9.55		---	0.00				
	10/30/00	10.25	145.40	135.15	0.00				Top of casing elevation surveyed.
	02/01/01	11.37		134.03	0.00				
	04/23/01	13.92		131.48	0.00				
	07/23/01	14.75		130.65	0.00				
	10/23/01	17.21		128.19	0.00				
	01/21/02	13.00	148.05	135.05	0.00				Top of casing elevations were surveyed for EDF compliance.
	04/25/02	14.05		134.00	0.00				
	07/22/02	14.30		133.75	0.00				
	10/22/02	14.70		133.35	0.00				
	01/27/03	12.62		135.43	0.00				
	04/21/03	12.81		135.24	0.00				
	07/21/03	13.75		134.30	0.00				
	01/20/04	11.71		136.34	0.00				
	07/19/04	13.36		134.69	0.00				
	01/18/05	10.05		138.00	0.00				

Table 7. Water Level Data/Well Construction Details - Redwood Oil Bulk Plant, 455 Yolanda Ave. Santa Rosa, CA

Well ID	Sample Date	TOC (Ft, msl)	DTW (Ft)	GWE (Ft, msl)	Product (ft)	Screen Interval	Sand Pack Interval	Bentonite/ Grout Interval	Notes				
MW-10	07/12/05	11.60	148.05	136.45	0.00	5 - 20	4.5 - 20	0 - 4.5					
	09/09/05	12.76		135.29	0.00								
MW-11	05/08/00	18.21	101.74	83.53	0.00	15-35	13-35	0-13					
	06/07/00	19.05		82.69	0.00								
	10/30/00	23.70	146.37	122.67	0.00				Top of casing elevation surveyed.				
	02/01/01	21.73		124.64	0.00								
	04/23/01	20.21		126.16	0.00								
	07/23/01	22.69		123.68	0.00								
	10/23/01	25.65		120.72	0.00								
	01/21/02	17.95	149.02	131.07	0.00				Top of casing elevations were surveyed for EDF compliance.				
	04/25/02	17.35		131.67	0.00								
	07/22/02	20.10		128.92	0.00								
	10/22/02	21.91		127.11	0.00								
	01/27/03	17.32		131.70	0.00								
	04/21/03	16.36		132.66	0.00								
	07/21/03	18.08		130.94	0.00								
	01/20/04	16.27		132.75	0.00								
	07/19/04	---		---	---								
	MW-12	05/08/00	20.75	101.15	80.40				0.00	10 - 30	8 - 30	0 - 8	
06/07/00		21.25	79.90		0.00								
10/30/00		25.43	146.38	120.95	0.00	Top of casing elevation surveyed.							
02/01/01		24.27		122.11	0.00								
04/23/01		22.00		124.38	0.00								
07/23/01		24.11		122.27	0.00								
10/23/01		26.38		120.00	0.00								
01/21/02		19.70	149.03	129.33	0.00	Top of casing elevations were surveyed for EDF compliance.							
04/25/02		18.91		130.12	0.00								
07/22/02		21.21		127.82	0.00								
10/22/02		23.98		125.05	0.00								
01/27/03		18.75		130.28	0.00								

Table 7. Water Level Data/Well Construction Details - Redwood Oil Bulk Plant, 455 Yolanda Ave. Santa Rosa, CA

Well ID	Sample Date	TOC (Ft, msl)	DTW (Ft)	GWE (Ft, msl)	Product (ft)	Screen Interval	Sand Pack Interval	Bentonite/ Grout Interval	Notes
MW-12	04/21/03	17.81	149.03	131.22	0.00	10 - 30	8 - 30	0 - 8	
	07/21/03	19.71		129.32	0.00				
	01/20/04	18.43		130.60	0.00				
	07/19/04	18.39		130.64	0.00				
	01/18/05	16.94		132.09	0.00				
MW-13	05/08/00	22.60	101.81	79.21	0.00	10 - 30	8 - 30	0 - 8	
	06/07/00	23.03		78.78	0.00				
	10/30/00	27.14	147.32	120.18	0.00				Top of casing elevation surveyed.
	02/01/01	26.11		121.21	0.00				
	04/23/01	23.56		123.76	0.00				
	07/23/01	25.76		121.56	0.00				
	10/23/01	27.60		119.72	0.00				Monitoring well has been abandoned.
MW-14	05/08/00	20.37	99.77	79.40	0.00	10-30	8-30	0-8	
	06/07/00	20.72		79.05	0.00				
	10/30/00	24.61	144.96	120.35	0.00				Top of casing elevation surveyed.
	02/01/01	23.57		121.39	0.00				
	04/23/01	21.13		123.83	0.00				
	07/23/01	23.18		121.78	0.00				
	10/23/01	25.50		119.46	0.00				Monitoring well has been abandoned.
MW-15	05/08/00	13.51	---	---	0.00	8-25	7-25	0-7	
	06/07/00	13.73	101.06	87.33	0.00				
	10/30/00	14.64	145.44	130.80	0.00				Top of casing elevation surveyed.
	02/01/01	15.04		130.40	0.00				
	04/23/01	16.72		128.72	0.00				
	07/23/01	19.62		125.82	0.00				
	10/23/01	22.17		123.27	0.00				
	01/21/02	14.80	148.09	133.29	0.00				Top of casing elevations were surveyed for EDF compliance.
	04/25/02	14.88		133.21	0.00				
	07/22/02	16.47		131.62	0.00				
	10/22/02	18.84		129.25	0.00				

Table 7. Water Level Data/Well Construction Details - Redwood Oil Bulk Plant, 455 Yolanda Ave. Santa Rosa, CA

Well ID	Sample Date	TOC (Ft, msl)	DTW (Ft)	GWE (Ft, msl)	Product (ft)	Screen Interval	Sand Pack Interval	Bentonite/ Grout Interval	Notes
MW-15	01/27/03	13.88	148.09	134.21	0.00	8-25	7-25	0-7	
	04/21/03	13.31		134.78	0.00				
	07/21/03	14.11		133.98	0.00				
	01/20/04	13.15		134.94	0.00				
	07/19/04	13.12		134.97	0.00				
	01/18/05	11.58		136.51	0.00				
	07/12/05	11.23		136.86	0.00				
MW-16	05/08/00	14.85	---	---	0.00	8-25	7-25	0-7	
	06/07/00	15.53	102.58	87.05	0.00				
	10/30/00	18.77	147.68	128.91	0.00				Top of casing elevation surveyed.
	02/01/01	18.17		129.51	0.00				
	04/23/01	14.58		133.10	0.00				
	07/23/01	24.26		123.42	0.00				
	10/23/01	23.40	150.33	124.28	0.00				
	01/21/02	14.11		136.22	0.00				Top of casing elevations were surveyed for EDF compliance.
	04/25/02	13.66		136.67	0.00				
	07/22/02	17.60		132.73	0.00				
	10/22/02	18.75		131.58	0.00				
	01/27/03	12.97		137.36	0.00				
	04/21/03	13.98		136.35	0.00				
	07/21/03	14.66		135.67	0.00				
	01/20/04	12.38		137.95	0.00				
	07/19/04	13.41		136.92	0.00				
	01/18/05	11.38		138.95	0.00				
	07/12/05	11.38		138.95	0.00				
MW-17	05/08/00	7.80	103.65	95.85	0.00	8 - 25	7 - 25	0 - 7	
	06/07/00	8.51	148.28	95.14	0.00				
	10/30/00	17.00		131.28	0.00				Top of casing elevation surveyed.
	02/01/01	7.86		140.42	0.00				
	04/23/01	8.38		139.90	0.00				
	08/22/01	11.80		136.48	0.00				

Table 7. Water Level Data/Well Construction Details - Redwood Oil Bulk Plant, 455 Yolanda Ave. Santa Rosa, CA

Well ID	Sample Date	TOC (Ft, msl)	DTW (Ft)	GWE (Ft, msl)	Product (ft)	Screen Interval	Sand Pack Interval	Bentonite/ Grout Interval	Notes
MW-17	10/23/01	13.15	148.28	135.13	0.00	8 - 25	7 - 25	0 - 7	
	01/21/02	7.10	150.93	143.83	0.00				Top of casing elevations were surveyed for EDF compliance.
	04/25/02	6.70		144.23	0.00				
	07/22/02	---		---	---				Well was inaccessible
	10/22/02	11.31		139.62	0.00				
	01/27/03	9.55		141.38	0.00				
	04/21/03	---		---	---				Well was inaccessible
	01/20/04	---		---	---				Well was inaccessible
	07/19/04	---		---	---				
	01/17/05	---		---	---				
	07/12/05	7.07		143.86	0.00				
MW-18	05/08/00	11.20	99.67	88.47	0.00	8 - 25	7 - 25	0 - 7	
	06/07/00	11.56		88.11	0.00				
	10/30/00	14.79	144.14	129.35	0.00				Top of casing elevation surveyed.
	02/01/01	13.91		130.23	0.00				
	04/23/01	13.30		130.84	0.00				
	07/23/01	14.71		129.43	0.00				
	10/23/01	18.15		125.99	0.00				
	01/21/02	12.15	146.79	134.64	0.00				Top of casing elevations were surveyed for EDF compliance.
	04/25/02	12.29		134.50	0.00				
	07/22/02	13.76		133.03	0.00				
	10/22/02	14.76		132.03	0.00				
	01/27/03	11.41		135.38	0.00				
	04/21/03	11.58		135.21	0.00				
	07/21/03	12.71		134.08	0.00				
	01/20/04	11.19		135.60	0.00				
	07/19/04	12.67		134.12	0.00				
	01/17/05	10.91		135.88	0.00				

Table 7. Water Level Data/Well Construction Details - Redwood Oil Bulk Plant, 455 Yolanda Ave. Santa Rosa, CA

Well ID	Sample Date	TOC (Ft, msl)	DTW (Ft)	GWE (Ft, msl)	Product (ft)	Screen Interval	Sand Pack Interval	Bentonite/ Grout Interval	Notes					
MW-19	05/08/00	8.95	100.42	91.47	0.00	8 - 25	7 - 25	0 - 7						
	06/07/00	9.62		90.80	0.00									
	10/30/00	12.66	145.18	132.52	0.00				Top of casing elevation surveyed.					
	02/01/01	12.65		132.53	0.00									
	04/23/01	10.55		134.63	0.00									
	07/23/01	12.27		132.91	0.00									
	10/23/01	13.92		131.26	0.00									
	01/21/02	9.44		147.83	138.39				0.00	Top of casing elevations were surveyed for EDF compliance.				
	04/25/02	9.61	138.22		0.00									
	07/22/02	10.65	137.18		0.00									
	10/22/02	11.66	136.17		0.00									
	01/27/03	9.60	138.23		0.00									
	04/21/03	9.16	138.67		0.00									
	07/21/03	9.55	138.28		0.00									
	01/20/04	9.20	138.63		0.00									
	07/19/04	10.68	137.15		0.00									
	01/17/05	9.33	138.50		0.00									
	MW-20	06/07/00	9.47		103.13				93.66	0.00	10-25	8-25	6-8	
10/30/00		11.81	147.48		135.67	0.00	Top of casing elevation surveyed.							
2/15/0112		11.42		136.06	0.00									
4/23/0113		---		---	---									
07/23/01		12.37		135.11	0.00									
10/23/01		13.45		134.03	0.00									
01/21/02		9.68	150.13	140.45	0.00	Top of casing elevations were surveyed for EDF compliance.								
04/25/02		—		—	---	Well was inaccessible								
07/22/02		11.41		138.72	0.00									
10/22/02		11.98		138.15	0.00									
01/27/03		10.78		139.35	0.00									
04/21/03		9.87		140.26	0.00									
07/21/03		12.16		137.97	0.00									
01/20/04		8.94		141.19	0.00									

Table 7. Water Level Data/Well Construction Details - Redwood Oil Bulk Plant, 455 Yolanda Ave. Santa Rosa, CA

Well ID	Sample Date	TOC (Ft, msl)	DTW (Ft)	GWE (Ft, msl)	Product (ft)	Screen Interval	Sand Pack Interval	Bentonite/ Grout Interval	Notes
MW-20	07/19/04	10.78	150.13	139.35	0.00	10-25	8-25	6-8	
	01/17/05	8.98		141.15	0.00				
V-1	06/13/91	21.89	102.53	80.64	0.00	15.5 - 25.5	13.5 - 25.5	0 - 13.5	
	07/09/91	21.91		80.62	0.00				
	08/01/91	21.34		81.19	0.00				
	08/29/91	21.10		81.43	0.00				
	09/11/91	21.25		81.28	0.00				
	10/08/91	22.88		79.65	0.00				
	11/08/91	22.15		80.38	0.00				
	12/11/91	---		---	---				
	01/13/92	21.28		81.25	0.00				
	02/11/92	18.75		83.78	0.00				
	03/11/92	13.54		88.99	0.00				
	04/13/92	14.52		88.01	0.00				
	05/15/92	15.18		87.35	0.00				
	06/15/92	16.29		86.24	0.00				
	07/16/92	17.22	102.53	85.31	0.00				
	08/18/92	17.08		85.45	0.00				
	09/18/92	18.25		84.28	0.00				
	12/08/92	17.80		84.73	0.00				
	03/10/93	15.59		86.94	0.00				
	06/04/93	14.97		87.56	0.00				
	10/14/93	14.66		87.87	0.00				
	04/11/94	14.00		88.53	0.00				
	10/19/94	13.92		88.61	0.00				
	04/11/95	9.28		93.25	0.00				
	03/06/96	9.72		92.81	0.00				
	10/14/96	11.91	102.51	90.60	0.00				Top of casing elevations were surveyed.
	04/09/97	10.48		92.03	0.00				
	10/29/97	13.96		88.57	0.02				
	04/07/98	8.01		94.50	0.00				
	10/07/98	11.10		91.41	0.00				
	04/07/99	8.15		94.36	0.00				

Table 7. Water Level Data/Well Construction Details - Redwood Oil Bulk Plant, 455 Yolanda Ave. Santa Rosa, CA

Well ID	Sample Date	TOC (Ft, msl)	DTW (Ft)	GWE (Ft, msl)	Product (ft)	Screen Interval	Sand Pack Interval	Bentonite/ Grout Interval	Notes	
V-1	10/19/99	11.49	102.51	91.02	0.00	15.5 - 25.5	13.5 - 25.5	0 - 13.5		
	04/26/00	8.64			93.87				0.00	
	10/30/00	11.85	146.85	135.00	0.00					Top of casing elevations were surveyed.
	02/26/01	12.55		134.30	0.00					
	04/23/01	13.14		133.71	0.00					
	07/23/01	13.73		133.12	0.00					
	10/23/01	14.85		132.00	0.00					
	01/21/02	11.70	149.50	137.80	0.00					Top of casing elevations were surveyed for EDF compliance.
	04/25/02	11.65		137.85	0.00					
	07/22/02	12.52		136.98	0.00					
	10/22/02	12.90		136.60	0.00					
	01/27/03	11.43		138.07	0.00					
	04/21/03	11.44		138.06	0.00					
	07/21/03	12.08		137.42	0.00					
	01/20/04	10.54		138.96	0.00					
	07/19/04	11.92		137.58	0.00					
	01/17/05	10.21		139.29	0.00					
	07/12/05	9.96		139.54	0.00					
V-2	06/13/91	---	101.13	---	---	8 - 23	7 - 23	0 - 7		
	07/09/91	---		---	---					
	08/01/91	---		---	---					
	08/29/91	---		---	---					
	09/11/91	---		---	---					
	10/08/91	---		---	---					
	11/08/91	---		---	---					
	12/11/91	---		---	---					
	01/13/92	18.39		82.74	0.00					
	02/11/92	21.16		79.97	0.00					
	03/11/92	16.86		84.27	0.00					
	04/13/92	17.03		84.10	0.00					
	05/15/92	17.78		83.35	0.00					
	06/15/92	21.44		79.69	0.00					

Table 7. Water Level Data/Well Construction Details - Redwood Oil Bulk Plant, 455 Yolanda Ave. Santa Rosa, CA

Well ID	Sample Date	TOC (Ft, msl)	DTW (Ft)	GWE (Ft, msl)	Product (ft)	Screen Interval	Sand Pack Interval	Bentonite/ Grout Interval	Notes
V-2	07/16/92	---	101.13	---	---	8 - 23	7 - 23	0 - 7	
	08/18/92	---		---	---				
	09/18/92	---		---	---				
	12/08/92	19.41		81.72	0.00				
	03/10/93	13.62		87.51	0.00				
	06/04/93	12.98		88.15	0.00				
	10/14/93	---		---	---				
	04/11/94	20.11		81.02	0.00				
	10/19/94	---		---	---				
	04/11/95	12.14		88.99	0.00				
	03/06/96	13.01		88.12	0.00				
	10/14/96	16.04	100.82	84.78	0.00				
	04/09/97	13.46		87.36	0.00				
	10/29/97	17.24		83.58	0.00				
	04/07/98	8.01		94.50	0.00				
	10/07/98	13.68		87.14	0.00				
	04/07/99	10.56		90.26	0.00				
	10/19/99	13.96		86.86	0.00				
	04/26/00	9.31		91.51	0.00				
	10/30/00	11.75	143.85	132.10	0.00				Top of casing elevations were surveyed.
	02/26/01	10.36		133.49	0.00				
	04/23/01	15.10		128.75	0.00				
	08/22/01	15.48		128.37	0.00				Well has been switched to a SVE (soil vapor extraction) well.
DW-1	06/13/91	37.82	102.64	64.82	0.00	140 - 180	61 - 180	0 - 61	Well has been abandoned.
	07/09/91	37.82		64.82	0.00				
	08/01/91	92.26		10.38	0.00				
	08/29/91	50.13		52.51	0.00				
	09/11/91	39.72		62.92	0.00				
	10/08/91	39.31		63.33	0.00				
	11/09/91	38.90		63.74	0.00				
	12/11/91	39.96		62.68	0.00				
	12/08/92	37.75		64.89	0.00				

Table 7. Water Level Data/Well Construction Details - Redwood Oil Bulk Plant, 455 Yolanda Ave. Santa Rosa, CA

Well ID	Sample Date	TOC (Ft, msl)	DTW (Ft)	GWE (Ft, msl)	Product (ft)	Screen Interval	Sand Pack Interval	Bentonite/ Grout Interval	Notes
DW-1	03/10/93	32.60	102.64	70.04	0.00	140 - 180	61 - 180	0 - 61	
	06/04/93	32.35		70.29	0.00				
	10/14/93	---		---	---				
DW-2	03/09/74	---	---	---	---	94 - 134	unknown	0 - 20	Well has been abandoned.
	10/17/95	---		---	---				
	10/21/96	---		---	---				
	04/10/97	---		---	---				
	10/30/97	---		---	---				
	04/08/98	---		---	---				
	10/07/98	---		---	---				
	04/07/99	---		---	---				
	08/30/99	23.23		---	0.48				

Table 7. Water Level Data/Well Construction Details - Redwood Oil Bulk Plant, 455 Yolanda Ave. Santa Rosa, CA

EXPLANATION:

DTW = Depth to water
ft =feet
msl = mean sea level
TOC = Top of casing elevation
GWE = Ground water elevation
— = **Not applicable**

Table 8. Hydrocarbon and MTBE Removal - Redwood Oil Company Bulk Plant, 455 Yolanda Ave., Santa Rosa, CA

Quarter	Gallons Pumped	Influent Hydrocarbon Concentration (TPH[D] + TPH[G]) (ug/L)	Hydrocarbon Removal (kg)	Influent MTBE	MTBE Removal (kg)	notes
2nd qtr '01	46,786	4,605	0.82	4,200	0.74	
3rd qtr '01	158,860	5,850	3.52	4,700	2.83	
4th qtr '01	192,067	3,100	2.48	4,100	2.98	
1st qtr '02	369,942	1,277	1.79	1,955	2.74	
2nd qtr '02	390,485	1,242	0.49	1,145	1.7	
3rd qtr '02	208,672	1,130	0.89	555	0.44	
4th qtr '02	255,724	887	0.86	2,240	2.05	
1st qtr '03	413,190	950	1.49	3,100	4.85	
2nd qtr '03	471,556	655	1.17	1,150	2.05	
3rd qtr '03	295,358	495	0.55	320	0.36	
4th qtr '03	68,947	790	0.21	110	0.03	
1st qtr '04	157,526	490	0.29	390	0.23	
2nd qtr '04	80,599	540	0.17	760	0.23	
3rd qtr '04	86,505	410	0.13	600	0.2	
4th qtr '04	194,170	2,000	1.47	190	0.14	
1st qtr 05	341,069	430	0.56	530	0.68	Lab indicated no TPH(D) or TPH(G) present. Concentration is from light Oil in the C12-C36 range.
2nd qtr 05	179,817	450	0.31	370	0.25	
3rd qtr 05	301,592	620	0.71	360	0.41	

APPENDIX C
LABORATORY ANALYTICAL REPORTS AND CHAIN OF CUSTODY RECORDS

Entech Analytical Labs, Inc.

3334 Victor Court • Santa Clara, CA 95054 • (408) 588-0200 • Fax (408) 588-0201

Jim Green
ECM Group
290 W. Channel Rd.
Benicia, CA 94510

Certificate ID: 44305 - 7/14/2005 5:52:48 PM

Order Number: 44305
Project Name: Windsor / Yolanda
Project Number: 98-507-91

Date Received: 7/8/2005 2:26:53 PM

Certificate of Analysis - Final Report

On July 08, 2005, samples were received under chain of custody for analysis.

Entech analyzes samples "as received" unless otherwise noted. The following results are included:

<u>Matrix</u>	<u>Test</u>	<u>Comments</u>
Liquid	EPA 8260B - GC/MS	
	TPH as Gasoline by GC/MS	
	TPH-Extractable w/SGCU	

Entech Analytical Labs, Inc. is certified for environmental analyses by the State of California (#2346).
If you have any questions regarding this report, please call us at 408-588-0200 ext. 225.

Sincerely,



Laurie Glantz-Murphy
Laboratory Director

Entech Analytical Labs, Inc.

3334 Victor Court , Santa Clara, CA 95054

Phone: (408) 588-0200

Fax: (408) 588-0201

ECM Group
290 W. Channel Rd.
Benicia, CA 94510
Attn: Jim Green

Project ID: 98-507-91
Date Received: 7/8/2005

Sample Collected by: Client

Certificate of Analysis - Data Report

Lab #: 44305-001 Sample ID: Influent

Matrix: Liquid Sample Date: 7/6/2005 1:30 PM

EPA 3510C EPA 8015 MOD.(Extractable with Silica Gel Cleanup)							TPH-Extractable-SGCU		
Parameter	Result	Qual	DF	Detection Limit	Units	Prep Date	Prep Batch	Analysis Date	QC Batch
TPH as Diesel	350		1	50	µg/L	7/8/2005	DW050708S	7/11/2005	DW050708S
Not a typical Diesel pattern(C10-C34).									
Surrogate	Surrogate Recovery	Control Limits (%)							Analyzed by: JHsiang
o-Terphenyl	91.2	16 - 137							Reviewed by: dba

EPA 5030B EPA 8260B EPA 624										8260Petroleum
Parameter	Result	Qual	DF	Detection Limit	Units	Prep Date	Prep Batch	Analysis Date	QC Batch	
Benzene	12		5	2.5	µg/L	N/A	N/A	7/13/2005	WMS1050713	
Toluene	ND		5	2.5	µg/L	N/A	N/A	7/13/2005	WMS1050713	
Ethyl Benzene	ND		5	2.5	µg/L	N/A	N/A	7/13/2005	WMS1050713	
Xylenes, Total	2.7		5	2.5	µg/L	N/A	N/A	7/13/2005	WMS1050713	
Methyl-t-butyl Ether	360		5	5.0	µg/L	N/A	N/A	7/13/2005	WMS1050713	
tert-Butyl Ethyl Ether	ND		5	25	µg/L	N/A	N/A	7/13/2005	WMS1050713	
tert-Butanol (TBA)	530		5	50	µg/L	N/A	N/A	7/13/2005	WMS1050713	
Diisopropyl Ether	ND		5	25	µg/L	N/A	N/A	7/13/2005	WMS1050713	
tert-Amyl Methyl Ether	ND		5	25	µg/L	N/A	N/A	7/13/2005	WMS1050713	
Surrogate	Surrogate Recovery	Control Limits (%)							Analyzed by: XBian	
4-Bromofluorobenzene	99.0	70 - 125							Reviewed by: bdhabalia	
Dibromofluoromethane	106	70 - 125								
Toluene-d8	97.3	70 - 125								

EPA 5030B GC-MS										TPH as Gasoline - GC-MS
Parameter	Result	Qual	DF	Detection Limit	Units	Prep Date	Prep Batch	Analysis Date	QC Batch	
TPH as Gasoline	270		5	250	µg/L	N/A	N/A	7/13/2005	WMS1050713	
Surrogate	Surrogate Recovery	Control Limits (%)							Analyzed by: XBian	
4-Bromofluorobenzene	105	70 - 125							Reviewed by: bdhabalia	
Dibromofluoromethane	97.4	70 - 125								
Toluene-d8	95.0	70 - 125								

Entech Analytical Labs, Inc.

3334 Victor Court , Santa Clara, CA 95054

Phone: (408) 588-0200

Fax: (408) 588-0201

ECM Group
290 W. Channel Rd.
Benicia, CA 94510
Attn: Jim Green

Project ID: 98-507-91
Date Received: 7/8/2005

Sample Collected by: Client

Certificate of Analysis - Data Report

Lab #: 44305-002

Sample ID: Mid

Matrix: Liquid Sample Date: 7/6/2005 1:40 PM

EPA 3510C EPA 8015 MOD.(Extractable with Silica Gel Cleanup)

Parameter	Result	Qual	DF	Detection Limit	Units	Prep Date	Prep Batch	Analysis Date	QC Batch
TPH as Diesel	ND		1	50	µg/L	7/8/2005	DW050708S	7/11/2005	DW050708S

Surrogate	Surrogate Recovery	Control Limits (%)
o-Terphenyl	82.4	16 - 137

Analyzed by: JHsiang

Reviewed by: dba

EPA 5030B EPA 8260B EPA 624

8260Petroleum

Parameter	Result	Qual	DF	Detection Limit	Units	Prep Date	Prep Batch	Analysis Date	QC Batch
Benzene	ND		1	0.50	µg/L	N/A	N/A	7/12/2005	WMS1050712
Toluene	ND		1	0.50	µg/L	N/A	N/A	7/12/2005	WMS1050712
Ethyl Benzene	ND		1	0.50	µg/L	N/A	N/A	7/12/2005	WMS1050712
Xylenes, Total	ND		1	0.50	µg/L	N/A	N/A	7/12/2005	WMS1050712
Methyl-t-butyl Ether	ND		1	1.0	µg/L	N/A	N/A	7/12/2005	WMS1050712
tert-Butyl Ethyl Ether	ND		1	5.0	µg/L	N/A	N/A	7/12/2005	WMS1050712
tert-Butanol (TBA)	11		1	10	µg/L	N/A	N/A	7/12/2005	WMS1050712
Diisopropyl Ether	ND		1	5.0	µg/L	N/A	N/A	7/12/2005	WMS1050712
tert-Amyl Methyl Ether	ND		1	5.0	µg/L	N/A	N/A	7/12/2005	WMS1050712

Surrogate	Surrogate Recovery	Control Limits (%)
4-Bromofluorobenzene	99.8	70 - 125
Dibromofluoromethane	110	70 - 125
Toluene-d8	98.4	70 - 125

Analyzed by: XBian

Reviewed by: BDhabalia

EPA 5030B GC-MS

TPH as Gasoline - GC-MS

Parameter	Result	Qual	DF	Detection Limit	Units	Prep Date	Prep Batch	Analysis Date	QC Batch
TPH as Gasoline	ND		1	50	µg/L	N/A	N/A	7/12/2005	WMS1050712

Surrogate	Surrogate Recovery	Control Limits (%)
4-Bromofluorobenzene	106	70 - 125
Dibromofluoromethane	101	70 - 125
Toluene-d8	96.1	70 - 125

Analyzed by: XBian

Reviewed by: BDhabalia

Entech Analytical Labs, Inc.

3334 Victor Court , Santa Clara, CA 95054 Phone: (408) 588-0200 Fax: (408) 588-0201

Method Blank - Liquid - EPA 8015 MOD.(Extractable with Silica Gel Cleanup) - TPH-Extractable-SGCU
QC/Prep Batch ID: DW050708S Validated by: dba - 07/11/05
QC/Prep Date: 7/8/2005

Parameter	Result	DF	PQLR	Units
TPH as Diesel	ND	1	50	µg/L

Surrogate for Blank	% Recovery	Control Limits
o-Terphenyl	72.8	16 - 137

Entech Analytical Labs, Inc.

3334 Victor Court , Santa Clara, CA 95054 Phone: (408) 588-0200 Fax: (408) 588-0201

Laboratory Control Sample / Duplicate - Liquid - EPA 8015 MOD.(Extractable with Silica Gel Cleanup) - TPH-Extractable-SGCU

QC/Prep Batch ID: DW050708S

Reviewed by: dba - 07/11/05

QC/Prep Date: 7/8/2005

LCS

Parameter	Method Blank	Spike Amt	SpikeResult	Units	% Recovery	Recovery Limits
TPH as Diesel	<50	1000	657	µg/L	65.7	35 - 109
TPH as Motor Oil	<250	1000	827	µg/L	82.7	30 - 132

Surrogate	% Recovery	Control Limits
o-Terphenyl	81.3	16 - 137

LCSD

Parameter	Method Blank	Spike Amt	SpikeResult	Units	% Recovery	RPD	RPD Limits	Recovery Limits
TPH as Diesel	<50	1000	716	µg/L	71.6	8.6	25.0	35 - 109
TPH as Motor Oil	<250	1000	939	µg/L	93.9	13	25.0	30 - 132

Surrogate	% Recovery	Control Limits
o-Terphenyl	85.8	16 - 137

Entech Analytical Labs, Inc.

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Method Blank - Liquid - EPA 8260B - 8260Petroleum

QC Batch ID: WMS1050712

Validated by: BDhabalia - 07/13/05

QC Batch Analysis Date: 7/12/2005

Parameter	Result	DF	PQLR	Units
Benzene	ND	1	0.50	µg/L
Diisopropyl Ether	ND	1	5.0	µg/L
Ethyl Benzene	ND	1	0.50	µg/L
Methyl-t-butyl Ether	ND	1	1.0	µg/L
tert-Amyl Methyl Ether	ND	1	5.0	µg/L
tert-Butanol (TBA)	ND	1	10	µg/L
tert-Butyl Ethyl Ether	ND	1	5.0	µg/L
Toluene	ND	1	0.50	µg/L
Xylenes, Total	ND	1	0.50	µg/L

Surrogate for Blank	% Recovery	Control Limits
4-Bromofluorobenzene	96.6	70 - 125
Dibromofluoromethane	99.8	70 - 125
Toluene-d8	98.1	70 - 125

Method Blank - Liquid - GC-MS - TPH as Gasoline - GC-MS

QC Batch ID: WMS1050712

Validated by: BDhabalia - 07/13/05

QC Batch Analysis Date: 7/12/2005

Parameter	Result	DF	PQLR	Units
TPH as Gasoline	ND	1	50	µg/L

Surrogate for Blank	% Recovery	Control Limits
4-Bromofluorobenzene	102	70 - 125
Dibromofluoromethane	91.3	70 - 125
Toluene-d8	95.8	70 - 125

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Laboratory Control Sample / Duplicate - Liquid - EPA 8260B - 8260Petroleum

QC Batch ID: WMS1050712

Reviewed by: BDhabalia - 07/13/05

QC Batch ID Analysis Date: 7/12/2005

LCS

Parameter	Method Blank	Spike Amt	SpikeResult	Units	% Recovery	Recovery Limits
Benzene	<0.50	20	21.2	µg/L	106	70 - 130
Methyl-t-butyl Ether	<1.0	20	22.5	µg/L	112	70 - 130
Toluene	<0.50	20	20.3	µg/L	102	70 - 130

Surrogate	% Recovery	Control Limits
4-Bromofluorobenzene	99.7	70 - 125
Dibromofluoromethane	103	70 - 125
Toluene-d8	96.2	70 - 125

LCSD

Parameter	Method Blank	Spike Amt	SpikeResult	Units	% Recovery	RPD	RPD Limits	Recovery Limits
Benzene	<0.50	20	19.3	µg/L	96.5	9.4	25.0	70 - 130
Methyl-t-butyl Ether	<1.0	20	21.7	µg/L	108	3.6	25.0	70 - 130
Toluene	<0.50	20	18.6	µg/L	93.0	8.7	25.0	70 - 130

Surrogate	% Recovery	Control Limits
4-Bromofluorobenzene	99.4	70 - 125
Dibromofluoromethane	103	70 - 125
Toluene-d8	95.3	70 - 125

Laboratory Control Sample / Duplicate - Liquid - GC-MS - TPH as Gasoline - GC-MS

QC Batch ID: WMS1050712

Reviewed by: BDhabalia - 07/13/05

QC Batch ID Analysis Date: 7/12/2005

LCS

Parameter	Method Blank	Spike Amt	SpikeResult	Units	% Recovery	Recovery Limits
TPH as Gasoline	<25	120	112	µg/L	89.6	65 - 135

Surrogate	% Recovery	Control Limits
4-Bromofluorobenzene	102	70 - 125
Dibromofluoromethane	91	70 - 125
Toluene-d8	96.1	70 - 125

LCSD

Parameter	Method Blank	Spike Amt	SpikeResult	Units	% Recovery	RPD	RPD Limits	Recovery Limits
TPH as Gasoline	<25	120	106	µg/L	85.0	0.0	25.0	65 - 135

Surrogate	% Recovery	Control Limits
4-Bromofluorobenzene	103	70 - 125
Dibromofluoromethane	91.8	70 - 125
Toluene-d8	95.8	70 - 125

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Matrix Spike / Matrix Spike Duplicate - Liquid - EPA 8260B - 8260Petroleum

QC Batch ID: WMS1050712

Reviewed by: BDhabalia - 07/13/05

QC Batch ID Analysis Date: 7/12/2005

MS

Sample Spiked: 44303-001

Parameter	Sample Result	Spike Amount	Spike Result	Units	Analysis Date	% Recovery	Recovery Limits
Benzene	ND	20	19.8	µg/L	7/12/2005	99.0	70 - 130
Methyl-t-butyl Ether	1.60	20	22.8	µg/L	7/12/2005	106	70 - 130
Toluene	ND	20	19.9	µg/L	7/12/2005	99.5	70 - 130

Surrogate	% Recovery	Control Limits
4-Bromofluorobenzene	96.8	70 - 125
Dibromofluoromethane	103	70 - 125
Toluene-d8	99.1	70 - 125

MSD

Sample Spiked: 44303-001

Parameter	Sample Result	Spike Amount	Spike Result	Units	Analysis Date	% Recovery	RPD	RPD Limits	Recovery Limits
Benzene	ND	20	20.2	µg/L	7/12/2005	101	2.0	25.0	70 - 130
Methyl-t-butyl Ether	1.60	20	23.0	µg/L	7/12/2005	107	0.94	25.0	70 - 130
Toluene	ND	20	20.8	µg/L	7/12/2005	104	4.4	25.0	70 - 130

Surrogate	% Recovery	Control Limits
4-Bromofluorobenzene	92.6	70 - 125
Dibromofluoromethane	103	70 - 125
Toluene-d8	102	70 - 125

Entech Analytical Labs, Inc.

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Method Blank - Liquid - EPA 8260B - 8260Petroleum

QC Batch ID: WMS1050713

Validated by: bdhabalia - 07/14/05

QC Batch Analysis Date: 7/13/2005

Parameter	Result	DF	PQLR	Units
Benzene	ND	1	0.50	µg/L
Diisopropyl Ether	ND	1	5.0	µg/L
Ethyl Benzene	ND	1	0.50	µg/L
Methyl-t-butyl Ether	ND	1	1.0	µg/L
tert-Amyl Methyl Ether	ND	1	5.0	µg/L
tert-Butanol (TBA)	ND	1	10	µg/L
tert-Butyl Ethyl Ether	ND	1	5.0	µg/L
Toluene	ND	1	0.50	µg/L
Xylenes, Total	ND	1	0.50	µg/L

Surrogate for Blank	% Recovery	Control Limits
4-Bromofluorobenzene	97.4	70 - 125
Dibromofluoromethane	100	70 - 125
Toluene-d8	97.7	70 - 125

Method Blank - Liquid - GC-MS - TPH as Gasoline - GC-MS

QC Batch ID: WMS1050713

Validated by: bdhabalia - 07/14/05

QC Batch Analysis Date: 7/13/2005

Parameter	Result	DF	PQLR	Units
TPH as Gasoline	ND	1	50	µg/L

Surrogate for Blank	% Recovery	Control Limits
4-Bromofluorobenzene	103	70 - 125
Dibromofluoromethane	91.7	70 - 125
Toluene-d8	95.4	70 - 125

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Laboratory Control Sample / Duplicate - Liquid - EPA 8260B - 8260Petroleum

QC Batch ID: WMS1050713

Reviewed by: bdhabalia - 07/14/05

QC Batch ID Analysis Date: 7/13/2005

LCS

Parameter	Method Blank	Spike Amt	SpikeResult	Units	% Recovery	Recovery Limits
Benzene	<0.50	20	20.9	µg/L	104	70 - 130
Methyl-t-butyl Ether	<1.0	20	23.2	µg/L	116	70 - 130
Toluene	<0.50	20	19.6	µg/L	98.0	70 - 130

Surrogate	% Recovery	Control Limits
4-Bromofluorobenzene	100	70 - 125
Dibromofluoromethane	104	70 - 125
Toluene-d8	94.4	70 - 125

LCSD

Parameter	Method Blank	Spike Amt	SpikeResult	Units	% Recovery	RPD	RPD Limits	Recovery Limits
Benzene	<0.50	20	21.4	µg/L	107	2.4	25.0	70 - 130
Methyl-t-butyl Ether	<1.0	20	23.6	µg/L	118	1.7	25.0	70 - 130
Toluene	<0.50	20	20.5	µg/L	102	4.5	25.0	70 - 130

Surrogate	% Recovery	Control Limits
4-Bromofluorobenzene	99.6	70 - 125
Dibromofluoromethane	104	70 - 125
Toluene-d8	94	70 - 125

Laboratory Control Sample / Duplicate - Liquid - GC-MS - TPH as Gasoline - GC-MS

QC Batch ID: WMS1050713

Reviewed by: bdhabalia - 07/14/05

QC Batch ID Analysis Date: 7/13/2005

LCS

Parameter	Method Blank	Spike Amt	SpikeResult	Units	% Recovery	Recovery Limits
TPH as Gasoline	<25	120	115	µg/L	91.9	65 - 135

Surrogate	% Recovery	Control Limits
4-Bromofluorobenzene	104	70 - 125
Dibromofluoromethane	91.8	70 - 125
Toluene-d8	94	70 - 125

LCSD

Parameter	Method Blank	Spike Amt	SpikeResult	Units	% Recovery	RPD	RPD Limits	Recovery Limits
TPH as Gasoline	<25	120	111	µg/L	88.5	3.8	25.0	65 - 135

Surrogate	% Recovery	Control Limits
4-Bromofluorobenzene	102	70 - 125
Dibromofluoromethane	90.9	70 - 125
Toluene-d8	93.8	70 - 125

Entech Analytical Labs, Inc.

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Chain of Custody / Analysis Request

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